BILINGUAL PUBLISHING GROUP

Journal of International Education and Practice

Volume 7 · Issue 2 · December 2024 ISSN 2630-516X(Online)

Volume 7 Issue 2 • December 2024 • ISSN 2630-516X (Online)

Journal of International Education and Practice

BILINGUAL PUBLISHING GROUP

BILINGUAL PUBLISHING GROUP

Volume 7 | Issue 2 | December 2024 | Page1-72

Journal of International Education and Practice

Contents

Articles

BILINGUAL PUBLISHING GROUP

Journal of International Education and Practice
https://ojs.bilpubgroup.com/index.php/jiep

ARTICLE

"We Lost Our Connection with the Children, the Smiles, the 'Good Mornings' ": Caring for Special Education Pupils During the COVID-19 Lockdown

***Raaya Alon*[1] *Deborah Bergman Deitcher*[2*]**

[1] *Michlalah Jerusalem College, Jerusalem, Israel*
[2] *Tel Aviv University, Tel Aviv, Israel*

ABSTRACT

Special education teachers care for their pupils' physical, emotional, and social needs, serve as the primary communication channel between the school and the parents, and coordinate other care workers such as paraprofessionals and psychologists. During the COVID-19 pandemic, the Israeli special education system moved to distance instruction, and slowly resumed operations following the first lockdown, even while the general education system remained shuttered. The life-threatening situation of the pandemic, where special education workers faced the crisis situation both personally and at the same time, professionally, in helping their students, families, and colleagues, created a situation of "shared trauma" for the teachers. Semi-structured interviews with 17 Israeli special education teachers were conducted to explore how they experienced the phenomenon of the pandemic. The teachers felt frustrated with the system, fearful for their health, lonely, and helpless in their ability to accomplish their job. Their work was negatively affected by masking and distance restrictions upon returning to the classroom. Many teachers benefitted from the support of colleagues and principals. We explore the implications for those who work with special education pupils and highlight the potential for increased cooperation and collaboration between care workers for their own benefit and the welfare of children.

Keywords: Caring; Emotions; Disabilities; Sensory experiences; Social support

1. Introduction

The special education system in Israel serves approximately 260,000 children in special education schools and special education classes housed in general education schools (Weissblay, 2019).[46] Ap-

*CORRESPONDING AUTHOR:
Deborah Bergman Deitcher, International Liberal Arts, Tel Aviv University, Tel Aviv, Israel, 6997801; Email: deb@deitcher.net.

ARTICLE INFO
Received: 28 May 2024 | Accepted: 2 July 2024 | Published: 21 July 2024
DOI: https://doi.org/10.30564/jiep.v7i2.5550

proximately half of these children suffer from more complex disabilities such as intellectual disability, Autism Spectrum Disorder (ASD), cerebral palsy, or blindness/deafness (Rumrill Jr. et al., 2020;[32] Weissblay, 2019).[46] Beyond teaching, special education teachers support and care for their pupils' physical, emotional, and social needs (Garwood, 2018).[17] They also interface with and coordinate others who work with these children including paraprofessionals (e.g., physical therapists), and psychologists (Weidberg & Ceobanu, 2021).[48] This work is often considered more demanding than that encountered by general education teachers (e.g., Billingsley & Bettini, 2019;[4] Hillel Lavian, 2015;[21] Kebbi & Al-Hroub, 2018).[25] During the COVID-19 pandemic, the Israeli special education system initially moved to distance instruction, and following the first lockdown, the system returned slowly to being operational, even while the general education system remained shuttered (Monikandam-Givon, 2021).[31] The COVID-19 pandemic created a life-threatening crisis situation, where the teachers had to continue to care for the pupils while their own health was at risk due to potential exposure to the virus, and they were also coping with the crisis that the pandemic caused in their own lives. This created a "shared trauma", where individuals face a crisis situation (e.g., war, pandemic, natural disaster) personally, and at the same time, professionally in helping their students, families and colleagues (Ali et al., 2023;[1] Dahan et al., 2022;[12] Tosone et al., 2015;[42] Tosone, 2020).[43] However, despite the essential role that special education workers play in the day-to-day lives of their pupils and families, and particularly during the pandemic, there has been little to no research on this population and how these teachers experienced the COVID-19 crisis in Israel. The current study employed a qualitative methodology to focus on the experiences of Israeli special education teachers and their caring responsibilities during the crisis situation of the COVID-19 pandemic, which created a shared trauma experience. Exploring the teachers' experiences during the pandemic through the lens of a shared trauma experience, like the crises of September 11th (McTighe et al., 2015)[29] and Hurricane Katrina (Tosone et al., 2015),[42] has implications for those who care for special education pupils, and for the potential for interagency collaboration (e.g., between the Ministry of Education and Ministry of Welfare or Ministry of Health) to benefit these pupils' welfare (Chudzik et al., 2024;[9] Tosone, 2020).[43]

Israeli Special Education & COVID-19

At the initial outbreak of COVID-19 in Israel (March, 2020), the educational system, including the special education system, shut down and most schools moved to distance learning with the aim of maintaining the learning routine and providing an emotional response to the pupils (Weissblay, 2021).[47] This included both special education schools, as well as special education classes housed in general education schools (where the general education classes remained locked down). Following the initial lockdown, the special education system gradually returned to operation, and continued during subsequent lockdowns (e.g., September, 2020, January, 2021), even while the general education system remained locked down (Monikandam-Givon, 2021).[31] However, the special education system was still limited by the COVID-related restrictions that sought to minimize the possibility of contagion and there were ongoing periods of isolation of teachers, pupils, and entire classes. This situation complicated teachers' ability to care for these pupils. Special education teachers needed to find innovative approaches to continue their work addressing children's academic, social-emotional, physical, cognitive and even basic needs working with children while still being the main point of contact for families and the community (e.g., Garwood et al., 2018;[17] Hurwitz et al., 2022;[23] Stenhoff et al., 2020).[39]

The challenging nature of special education work has been associated with teacher stress, burnout, and compassion fatigue (Brunsting et al., 2014;[6] De Stasio et al., 2017;[13] Sharp Donahoo et al., 2018).[35] For example, Conley and You (2017)[10] reported that special education teachers experience greater work-related stress levels than general education teachers. The COVID-19 pandemic heightened the uniqueness of, and challenges involved in special

education work. Experiencing the crisis of the pandemic themselves, while also having to care for their special education pupils, their families, and others in the system, created an experience of "shared trauma" for these special education teachers.

The Current Study

Despite their role as critical carers for special education children, and the unique hardships they experienced, there has been little to no research on how special education teachers experienced the trauma of the COVID-19 crisis. We aimed to fill this gap in knowledge and contribute to a greater understanding of these caregivers' experiences, particularly in light of the shared trauma created by the situation. This understanding can lead to improvement in the special education system as a whole. In this light, we conducted a phenomenological study, aiming to explore how special education teachers experienced the phenomenon of the COVID-19 pandemic in Israel. A phenomenological study focuses on "what" individuals experienced and "how" they experienced it (Creswell & Poth, 2016;[11] Merriam-Grenier, 2019).[30] To achieve this, we relied on semi-structured in-depth interviews to focus on the teachers' experiences during this challenging time.

2 Method

2.1 Sampling and Participants

The participants were recruited using a combination of purposive and snowball sampling (Shkedi, 2011).[36] The first author asked special education teachers within her professional network to share the invitation to participate with other teachers in their networks, and to share the invitation via WhatsApp groups of special education teachers. As all special education teachers in the Israeli system are Ministry of Education approved, they all met the criteria of having experienced the COVID-19 pandemic and the various closures of the system. Consequently, this sampling approach was conducive to the phenomenological aims of the study (Creswell & Poth, 2016).[11]

The study included 17 Israeli special education teachers who work with various populations within the system. The teachers' ages ranged from 24-42 and most were married with children. The teachers' years of experience ranged from 1 to 18 years, with an average of 13.4 years. Most of the teachers worked in preschools that served children with ASD and children with intellectual disabilities. Some of the teachers worked in special education classes in general education schools, while others worked in special education schools. Details of the participants can be found in Table 1.

Table 1 Participating Teachers' Demographic Details

Name	Age	Family status	Experience (in years)	Work placement/type
Efrat	35	Single	12	Children with ASD, elementary school
Yael	40	Married +5	16	Children with ASD, elementary school
Sarah	39	Married +5	9	Children with ASD, elementary school
Lucy	26	Married +3	5	Children with borderline intellectual disabilities, elementary school
Esther	40	Married +7	15	Children with ASD, elementary school
Becky	39	Married +5	9	Children with ASD, elementary school
Bella	28	Single	4	Children with ASD, elementary school
Rachel	42	Married +6	18	Children with ASD, high school
Lihi	35	Married +3	13	Children with ASD, elementary school
Yaffa	33	Married +5	10	Children with ASD, elementary school
Ayala	42	Married +7	18	Children with developmental intellectual disability, middle school
Ahuva	24	Married +1	1	Children with developmental intellectual disability, elementary school
Lilac	28	Married +4	7	Children with developmental intellectual disability, elementary school
Yehudit	27	Married	5	Children with developmental intellectual disability, high school
Miri	30	Married +1	8	Children with developmental intellectual disability, middle school
Nava	30	Married +3	6	Children with developmental intellectual disability, elementary school
Tali	33	Married +4	8	Children with ASD, elementary school

2.2 Data Collection

The study relied on semi-structured interviews, each lasting approximately one hour. To comply with the COVID-19-related restrictions at the time of the study, the interviews were conducted over Zoom. The interviews began with a more general question that facilitated participants' sharing their attitudes and perspectives in an open way – "Tell me about yourself and your work". This was followed by additional questions relating to the teachers' work (e.g., "Can you tell me about any feelings that accompanied your work during COVID-19"). All the interviews were recorded and transcribed. Saturation was reached after 17 semi-structured interviews generated redundancy in the content of the participants' responses (Fusch & Ness, 2015;[16] Saunders et al., 2018).[33]

2.3 Ethics

The study was conducted in line with ethical guidelines for qualitative research (Doshnik & Zabar Ben-Yehoshua, 2016),[14] and received the ethical approval of the institution's ethical review board. All the teachers signed an informed consent form prior to the interviews. All names and identifying information have been changed to protect the participants' privacy.

Data Analysis

For the data analysis, we conducted a full thematic analysis using iterative readings of the interviews (Braun et al., 2018).[5] According to this approach, themes are thought to reflect "a *pattern* of shared meaning, organized around a core concept or idea, a central organizing concept" (Braun et al., 2018).[5] In this analysis, the first author read all the interviews and identified initial themes. The second author then went through a selection of the interviews and the themes were discussed and finalized between the authors. The central themes focused on in this article address participants' emotions during the pandemic, how sensory elements were affected, the importance of social support, and the teachers' experiences as part of the broader special education system. These main themes are presented below and illustrated with quotations from the teachers.

Both in conducting the interviews and in the data analysis, the authors needed to consider the ways in which their own professional background and experiences might impact the research (Leavy, 2022).[27] Neither author is a special education teacher, but the first author is the head of the college's special education department. This provides her with particular insight into the special education system but may also lead to particular interpretations of the data. This was part of the rationale for the second author going through the interviews and themes and discussing them. In addition, the first author made notes of her own personal thoughts and feelings that may have arisen during the analysis process.

3 Results

3.1 Teachers' Emotions

The sudden move to distance learning at the beginning of the pandemic forced teachers to cope with new methods of teaching that would be appropriate for the pupils in their current reading. That is, a reality for which they could not always prepare ahead of time. Each teacher approached this challenge somewhat differently, in the sense that each student with intellectual disability faces unique difficulties and challenges. Numerous emotions were expressed by the teachers, but the most frequently emerging ones were frustration and fear/worry. These emotions are expressed in the various quotes below.

Ahuva related that the main challenge was a lack of appropriate learning tools:

> *Working from a distance was a nightmare, because in the end, there were no symbols at home, no communication board, and things that you needed because I have pupils with vision problems in the class. There's no black background…I didn't have any of these things…and I had to be really creative because I didn't have any of the accessories that are there in the classroom.*

Due to the reduction in the professional and paraprofessional staff during the pandemic to reduce

opportunities for contagion, the classroom teachers were teaching all day, every day, leading to strong feelings of frustration. Nava explained: "It was very frustrating. The number of lessons you had to prepare was crazy. The pupils see the same person every single day without any kind of change, and it was frustrating. "Efrat experienced this somewhat as a feeling that she wasn't sufficient: "The children needed to be worked with, by the communication clinician, and other paramedical professionals, and they just missed getting what they really needed for a very long time. It was very hard. I felt like I wasn't doing good enough work." Rachel also related to this: "They wanted us to do the impossible. They told us to celebrate birthdays for the children, but we weren't allowed to give out cake. We couldn't do cooking lessons. All kinds of rules that weren't relevant. They expected us to be super-people and it was really difficult."

The realities of the return to work for the teachers in the special education system were also associated with particular emotions. Tali very clearly explained the complicated feelings of this time:

> *My feelings were very difficult because they were always putting us at a disadvantage. They never even showed us on the television, we never got screen time. No one agreed to interview us… they didn't ask if we were managing, that we have to leave our own children at home and come to work. There was this feeling that we don't matter.*

Fear and worry frequently accompanied the special education teachers when they returned to work during the lockdowns. Esther said:

> *There was worry for us as teachers and for the pupils. We are taking a particular risk, and we can get sick, but the pupils also, so there wasn't exactly a calm learning environment. It was a stressful environment full of worry.*

Sarah also expressed this: "We were just afraid to come to work. There was so much fear associated with this whole situation."

The overwhelming negative feelings can be summed up in Lucy's statement:

> *We were just miserable, I was miserable. I just didn't want to come to school. I asked if I could not come, and they told me that I was obligated. This obligation took a very heavy toll on my family, my kids. And it's not acceptable that at the end of the day that my work should come first in my head instead of my kids.*

3.2 Sensory Experiences

Many of the teachers related to the sensory aspects of special education and how these were affected by the pandemic. According to Lilac, the main difficulty in learning manifested itself in the avoidance of physical touch and the inability to illustrate what was learned: "In our population, it's very difficult to move the learning to distance learning or Zoom because most of our work is essentially physical…everything has to really be sensory - to show them and let them feel things." Miri agreed but expressed this idea somewhat differently:

> *Children who are nonverbal can't talk on the telephone. Really, I had pupils who would call using video and wave hello and try to connect it to what is happening in reality, but in the end, they're at home and learning at home isn't learning in school, and certainly not for our pupils. It's hard to say that we were able to fulfill the child's IEP goals. Think that if in a regular school it was difficult, how much more it was in these settings.*

A number of the teachers mentioned that a central challenge related to the children's language expression and how it was limited by the mask requirements. Lilac described this:

> *There were masks, there were plastic shields over the masks, we had robes, and gloves. In the beginning it was really strange, and the children couldn't really identify us…It was difficult for the pupils, and at times I did take my mask down for a minute and just keep the shield, because sometimes they had to see my lips.*

Yaffa added to this and noted how the learning and expansion of vocabulary was impaired for the children:

> *We were in masks all day. I can count on my hands the number of times that they saw my face… it's ridiculous. Especially since these are children with special needs who really need to see the face. I had one student who only said a few words and I aimed to expand her vocabulary, but with COVID-19, it was much harder.*

Similarly, Ayala added: "We worked in robes and masks this year and it was really hard. For example, I have a student who is learning to speak but he couldn't see my mouth…it caused issues with teaching."

The importance of physical touch was mentioned by some of the other participants as well. For example, Yehudit related: "It really led to physical distance….fewer hugs and the like. Also, academically. For example, some pupils, you need to help them learn how to write their letters, so you really have to touch them [and we couldn't]." She also described the impact of the constant disinfection of the surfaces and maintaining distance: "There is really physical work with these children, they need help to learn how to eat, but when you have to maintain distance, this is really challenging. Children who need help going to the bathroom - you can't just tell them to do it themselves." Becky also mentioned the lack of physicality, "In the beginning we really came with masks and kept our distance, but all of a sudden you can't hug the little kids. All the time there's this pressure, to be distant, to disinfect, etc." These difficulties can be summarized in Efrat's words:

> *In special education, there's a lot of warmth, closeness, touch, you - your face. They have to see your smile…it's something we can see with our eyes, but this [COVID-19], this is not that.*

3.3 Social Support

Many teachers related to the lack of social support that they experienced during the pandemic. For example, Lihi explained:

> *In previous years, the staff would know each other much better and do things together. This year, there's more distance between the staff that I work with all the time…there's no opportunity to do things together.*

The teachers who work with special education pupils in general education schools returned to school alone, which was greatly felt by the special education teachers, such as Yehudit:

> *The teachers' presence is very meaningful. First, it gives the children someone else, it gives me more air. When the gym teacher comes in I can breathe for a minute, get a drink, use the bathroom, call a parent who was looking for me, sit with another teacher to update her. During COVID-19, this didn't happen.*

Efrat noted the difficulties that this time created between staff and also related to the anger she felt towards others for their lack of effort:

> *I felt that really no one cared about us, and it also created many problems amongst the staff….. The occupational therapist said she couldn't come because she had little children…. To some degree I was angry - you know, I also have little children and have to make arrangements, and I don't let myself not come…like I really did everything in my power to come, but she didn't feel the need.*

Esther described the lack of support from the principal:

> *I felt that she [the principal] was trying to appease the parents, but less listening to our needs… it made it very difficult, because she wanted things to be like regular routine for the children and for the parents to be satisfied, but at a certain point, I didn't feel like she listened to us and our needs enough, the staff. I have a staff member who's at-risk, and there was no option to not come to work, there were no options, you do what's regular, and that's it. There's not much to talk about or do about it.*

In contrast to the above, some of the teachers felt that the support they received was extremely helpful. For instance, Yael said:

> *The principal was amazing. She really understood that the teachers didn't want to come and put themselves at risk…it really strengthened the relationship with the principal because she came from a place of understanding and knew how to say that everyone should do what they can, rather than just ignoring the situation. She's a very open and understanding principal.*

Bella also mentioned the support she received: "Particularly the principal who always took an interest. When she came to school she would always come to the class, say hello." Similarly, Yaffa noted: "There is so much support, from the staff as well as from home...my husband and friends; it really strengthened me and helped during this crisis."

3.4 Teachers' Experiences as Part of the Broader Special Education System

A number of the interviewees expressed senti-

ments relating to their experience with the broader special education system during the COVID-19 crisis. Many of the teachers explained how "invisible" they felt when they had to return to work during this time, often in contrast to the broad recognition that essential medical workers received. Becky noted this: "We should feel that they relate to us a little more and we're not just coming to work. I don't feel like I'm just coming to work, I go beyond that." Recognition and acknowledgement by the special education system was needed by the special education teachers. The Ministry of Education, which oversees the special education system and was involved in decisions regarding school closures/re-openings, also contributed to the teachers' confusion and difficulties during the pandemic, due to conflicting messages with the Ministry of Health. As Sarah said: "There was a disconnect between the Ministries, but you know that there are these bureaucratic issues that aren't dependent on a single factor. I have no way to control the educational system." Lihi also related to the bureaucracy: "The guidelines that were received from the Ministry of Education were confusing, not clear, and disconnected so most people couldn't follow them. Teachers couldn't follow them themselves and had a hard time instructing the pupils to follow them."

The teachers alluded to a disconnect between the Ministry of Education and the realities on the ground that they were experiencing. According to Yael, there wasn't enough distinction between the different levels of special education: "The announcement about the return to school related just to official special education institutions, and ignored the many children who are in small classes within general education schools, who are special education pupils. These pupils didn't receive appropriate care." The differences in the types of special education pupils and classrooms did not seem to be taken into sufficient consideration by the broader system.

Lastly, some of the teachers related to participation in special education overall, and how teacher attrition was an issue that was compounded by the pandemic. As Esther explained:

> *I look at our staff this year, and it's full of teachers who left – teachers who took a sabbatical, some who decided it's just not for them, many who switched professions. This year was very difficult, and many teachers just reached their threshold and felt it was too much. I don't know how it's possible to do things differently, but this year definitely made a difference…I came with less energy, I really want to come but the work this year was really, really difficult.*

Many of the teachers thus contended with their own personal situation, but also saw issues with the way the broader special education system was handling the pandemic, with mixed message and a lack of caring leading to complex emotions, teacher confusion and stress, and at times, leaving the profession.

4 Discussion

During COVID-19, special education teachers felt invisible, that the system as a whole was minimized, and their care was not taken sufficiently into consideration by policymakers [30](e.g., Katz & Cohen, 2021).[24] In turn, this impacted their ability to effectively care for their special education pupils. The shared trauma that the teachers experienced during the crisis of the pandemic thus was not sufficiently understood or appreciated by those within and outside the system. The experiences and responses of the special education teachers in this study can lend themselves to addressing issues within and beyond the underlying system, both in its day-to-day functioning as well as in future crisis situations.

Practically all of the participating special education teachers in our study expressed frustration and fear/worry as a result of the move to distance learning, the return to work while the general education system remained closed, and the COVID-19 virus itself. This is in line with studies from around the world (e.g., Glessner & Johnson, 2020).[18] For example, Sayman and Cornell (2021)[34] examined the journals of 12 special education teachers and reported similar emotions of confusion, frustration, fear, and anxiety, which translated into feelings of loss and grief. Further, special education teachers

in the Philippines reported tremendous fear, a lack of preparedness to deal with the transition to online learning, and loneliness due to the social isolation resulting from the pandemic (Toquero, 2021).[41]

Similarly, experiencing the pandemic themselves, and in those with whom they work, fosters the shared trauma in care workers (Tosone, 2020).[43] Thus, the pandemic seems to have impacted special education teachers, taking an emotional toll at multiple levels relating to the nature of the work itself as well as fears and concerns for themselves, their families, and their children. Indeed, the teachers often noted how alone they felt and that they took on the roles of other special education caregivers. This highlights the need for improved communication and collaboration between caregivers of special education pupils to promote not only the pupils' welfare, but also their own.

One feature that emerged in many of the interviews related to the physical and sensory elements, which are particularly prominent in special education. A study of early childhood special education teachers in the U.S. also revealed that the teachers described the absence of physical contact as particularly challenging, especially for children with disabilities (Steed & Leech, 2021).[37] Children with ASD and other developmental disabilities often demonstrate atypical responses to sensory input, such as hyperresponsiveness or hyporesponsiveness (Butera et al., 2020;[7] Little et al., 2015).[28] The COVID-19 pandemic, with the focus on social distancing, masking, sanitizing, made it all the more complicated for the special education teachers to address the sensory aspects of the pupils' learning, and many felt that their hands were tied in adapting their teaching approaches (e.g., Yakut, 2021).[44] Green and Moran (2021)[19] noted the negative implications of sensory and touch deprivation that resulted from social distancing policies. This element of special education work was significantly hampered by the governmental decisions made during the pandemic, and the special education professionals felt that this complicated their already-difficult situation (Glessner & Johnson, 2020).[18] The COVID-19 pandemic can thus be instructive in how important it is, even in unexpected crisis situations, to be focused on a specific and unique response to each segment of the population, and especially thinking about children's welfare in crisis situations. In the future, policymakers should be more aware of, and sensitive to, the unique nature of special education work, such as the importance of touch and sensory experiences.

For special education workers, receiving support from others is related to greater job satisfaction and commitment to the job (Bettini et al., 2020;[3] Billingsley & Bettini, 2019).[4] In particular, recognition and acknowledgement are important elements of emotional support (Alon & Aram, 2021;[2] Cinamon, 2009).[8] The feeling of abandonment was noted by various educators during the COVID-19 pandemic (Feldman et al., 2022),[15] particularly in contrast to emergency workers such as doctors and nurses, who were publicly acknowledged and thanked. At the same time, some of the participants in this study specifically related to the benefits of receiving support from their school principals. These finding is in line with other studies around the world relating to this crisis time period, highlighting that those working in special education sought social support as a way of coping with the additional stressors of the time (Glessner & Johnson, 2020;[18] Klapproth et al., 2020).[26] Social support helps promote retention of critical caregivers connected to special education (e.g., Hester et al., 2020;[20] Hughes et al., 2015;[22] Stang-Rabrig et al., 2022;[38] Webb & Carpenter, 2012).[45] Further, social support can be help those in situations of shared trauma and can promote resilience (Stahnke & Firestone, 2024).[40] Increasing recognition and acknowledgement of the critical care provided by special education teachers may make them more visible and "seen," and perhaps, more likely to remain in the special education system, which so desperately needs them.

Beyond recognition, support at all levels -- from colleagues, from principals, and from the broader system, is necessary for those working within the special education system. The current study highlights this need and provides lessons for the broader Israeli education system as to improving the sense of

social support during general functioning, and particularly during crisis situations. Moreover, experts in treating trauma should be included in the support provided in times of crisis. Thus, the need for social support extends beyond the educational system and to the broader support system of the state in general. In particular, greater coordination between governmental bodies is needed. Although a crisis situation, like a pandemic, can understandably lead to conflicting governmental edicts, there were inconsistencies in the directions that were given from the Ministry of Education and the Ministry of Health. This led to a lack of understanding and confusion amongst educators (Feldman et al., 2022)[15] as to their responsibilities, risks, and obligations. It is important in future crises for various governmental bodies to be united prior to conveying particular directions in order to avoid confusion and lend stability during an inherently unstable time.

Limitations & Future Research

The current study's results are limited by a number of aspects. First, while the qualitative methodology used enabled a deeper exploration of the special education teachers' experiences through the use of interviews, it is more difficult to generalize these results to the broader population as might be true using a quantitative approach. Similarly, although reasonable for a qualitative study, the sample size was fairly small for generalizability. While the study provided profound insights into the experiences of special education teachers, it would also be interesting to gain the perspectives of others who work with special education teachers, including principals and parents.

5 Conclusions

Professionals involved in special education face challenges due to the nature of the population and the kind of work involved. The COVID-19 pandemic added to these difficulties, creating a situation of shared trauma where special education workers experienced the pandemic both personally and professionally. They worried about their own health and fear of contracting the virus combined with having to help pupils and their families navigate the crisis. This was associated with emotions such as frustration, worry, and loneliness, increased challenges of reduced physical and sensory interactions, and a lack of social support for many. The study has implications for Israeli policymakers in terms of the importance of children's welfare and the needs of the professionals who care for them, especially those in special education during times of crisis. Governmental bodies such as the Ministry of Education, Ministry of Welfare, and Ministry of Health must consider these needs when responding to future crises. Greater inter-agency collaboration should be promoted to facilitate cooperation between all who are involved in the special education system. It appears that this is currently not the norm in Israel, despite the potential benefits of such collaboration. Specific trauma-related treatment should be included during crisis situations and aiding in the support of special education workers. There is also an increased need for recognition of special education professionals' work, sensitivity to the unique nature of this work, and the tremendous importance of social support at all levels of the system. As Becky highlighted: "It's important that there will be more recognition. I'm not only talking about the principals and teachers, I'm talking about recognition from the country, from the education system, which there hasn't been to date."

References

[1] Ali, D. A., Figley, C. R., Tedeschi, R. G., Galarneau, D., & Amara, S. (2023). Shared trauma, resilience, and growth: A roadmap toward transcultural conceptualization. *Psychological Trauma: Theory, Research, Practice, and Policy, 15*(1), 45-55. https://doi.org/10.1037/tra0001044

[2] Alon, R., Cinamon, R.G. & Aram, D. (2021). Working adults' future occupational plans: The contribution of role characteristics, social support, and occupational self-efficacy. *International Journal for Educational and Vocational Guidance, 20,* 1-21.

[3] Bettini, E., Cumming, M. M., O'Brien, K. M., Brunsting, N. C., Ragunathan, M., Sutton, R., & Chopra, A. (2020). Predicting special educators' intent to continue teaching pupils with emotional or behavioral disorders in self-contained settings. *Exceptional Children*, *86*(2), 209-228. https://doi.org/10.1177/1473325020973321

[4] Billingsley, B., & Bettini, E. (2019). Special education teacher attrition and retention: A review of the literature. *Review of Educational Research*, *89*(5), 697-744. https://doi.org/10.3102/0034654319862495

[5] Braun, V., Clarke, V., Hayfield, N., Terry, G. (2018). Thematic Analysis. In P. Liamputtong (ed.) *Handbook of research methods in health social sciences* (pp. 1-18). Springer. https://doi.org/10.1007/978-981-10-2779-6_103-1

[6] Brunsting, N. C., Sreckovic, M. A., & Lane, K. L. (2014). Special education teacher burnout: A synthesis of research from 1979 to 2013. *Education and Treatment of Children*, 681-711. https://doi: 10.1353/etc.2014.003

[7] Butera, C., Ring, P., Sideris, J., Jayashankar, A., Kilroy, E., Harrison, L., Cermak, S., & Aziz-Zadeh, L. (2020). Impact of sensory processing on school performance outcomes in high functioning individuals with autism spectrum disorder. *Mind, Brain, and Education*, *14*(3), 243-254. https://doi.org/10.1111%2Fmbe.12242

[8] Cinamon, R. G. (2009). Role salience, social support, and work—family conflict among Jewish and Arab female teachers in Israel. *Journal of Career Development*, *36*(2), 139-158. https://dx.doi.org/10.1177/0894845309345849

[9] Chudzik, M., Corr, C., & Fisher, K. W. (2024). Trauma-informed care: The professional development needs of early childhood special education teachers. *Journal of Early Intervention*, *46*(1), 113-129. https://doi.org/10.1177/10538151231164898

[10] Conley, S., & You, S. (2017). Key influences on special education teachers' intentions to leave: The effects of administrative support and teacher team efficacy in a mediational model. *Educational Management Administration & Leadership*, *45*(3), 521-540. https://doi.org/10.1177/1741143215608859

[11] Creswell, J. W., & Poth, C. N. (2016). *Qualitative inquiry and research design: Choosing among five approaches.* Sage Publications.

[12] Dahan, S., Levi, G., & Segev, R. (2022). Shared trauma during the COVID-19 pandemic: Psychological effects on Israeli mental health nurses. *International Journal of Mental Health Nursing*, *31*(3), 722-730. https://doi.org/10.1111/inm.12996

[13] De Stasio, S., Fiorilli, C., Benevene, P., Uusitalo-Malmivaara, L., & Chiacchio, C. D. (2017). Burnout in special needs teachers at kindergarten and primary school: Investigating the role of personal resources and work wellbeing. *Psychology in the Schools*, *54*(5), 472-486. https://doi: 10.1002/pits.22013

[14] Doshnik, L. & Tzabar Ben-Yehoshua, N. (2016). Ethics for qualitative research. In N. Tzabar Ben-Yehoshua (Ed.), *Traditions and trends in qualitative research, concepts, strategies and advanced tools* (pp. 217-235). MOFET. [Hebrew]

[15] Feldman, G., Itzhaki-Braun, Y., Frankenburg, R., & Friedman-Hauser, G. (2022). Let's talk about our feelings: Emotional labour of community practice in times of pandemic. *Social Policy & Administration*, *56*(5), 693-704. https://doi.org/10.1111/spol.12788

[16] Fusch, P. I., & Ness, L.R. (2015). Are we there yet? Data saturation in qualitative research. *The Qualitative Report, 20*(9), 1408–1416.

[17] Garwood, J. D., Werts, M. G., Varghese, C., & Gosey, L. (2018). Mixed-methods analysis of rural special educators' role stressors, behavior management, and burnout. *Rural Special Education Quarterly*, *37*(1), 30-43. https://doi.org/10.1177/8756870517745270

[18] Glessner, M. M., & Johnson, S. A. (2020). The experiences and perceptions of practicing spe-

cial education teachers during the COVID-19 pandemic. *The Interactive Journal of Global Leadership and Learning*, *1*(2), 1-41. https://doi.org/10.55354/2692-3394.1013

[19] Green, L., & Moran, L. (2021). COVID-19, social distancing and the 'scientisation' of touch: Exploring the changing social and emotional contexts of touch and their implications for social work. *Qualitative Social Work*, *20*(1-2), 171-178.

[20] Hester, O. R., Bridges, S. A., & Rollins, L. H. (2020). 'Overworked and underappreciated': special education teachers describe stress and attrition. *Teacher Development*, *24*(3), 348-365. https://doi.org/10.1080/13664530.2020.1767189

[21] Hillel Lavian, R. (2015). Masters of weaving: The complex role of special education teachers. *Teachers and Teaching*, *21*(1), 103-126.

[22] Hughes, A. L., Matt, J. J., & O'Reilly, F. L. (2015). Principal support is imperative to the retention of teachers in hard-to-staff schools. *Journal of Education and Training Studies*, *3*(1), 129-134. https://dx.doi.org/10.11114/jets.v3i1.622

[23] Hurwitz, S., Garman-McClaine, B., & Carlock, K. (2022). Special education for pupils with autism during the COVID-19 pandemic: "Each day brings new challenges". *Autism*, *26*(4), 889-899. https://doi.org/10.1177/13623613211035935

[24] Katz, C., & Cohen, N. (2021). Invisible children and non-essential workers: Child protection during COVID-19 in Israel according to policy documents and media coverage. *Child Abuse & Neglect*, *116*(part 2), 104770. https://doi.org/10.1016%2Fj.chiabu.2020.104770

[25] Kebbi, M., & Al-Hroub, A. (2018). Stress and coping strategies used by special education and general classroom teachers. *International Journal of Special Education*, *33*(1), 34-61.

[26] Klapproth, F., Federkeil, L., Heinschke, F., & Jungmann, T. (2020). Teachers' experiences of stress and their coping strategies during COVID-19 induced distance teaching. *Journal of Pedagogical Research, 4*(4), 444-452. http://dx.doi.org/10.33902/JPR.2020062805

[27] Leavy, P. (2022). *Research design: Quantitative, qualitative, mixed methods, arts-based, and community-based participatory research approaches*. Guilford Publications.

[28] Little, L. M., Ausderau, K., Sideris, J., & Baranek, G. T. (2015). Activity participation and sensory features among children with Autism Spectrum Disorders. *Journal of Autism and Developmental Disorders*, *45*(9), 2981–2990. https://doi.org/10.1007/s10803-015-2460-3

[29] McTighe, J. P., & Tosone, C. (2015). Narrative and meaning-making among Manhattan social workers in the wake of September 11, 2001. *Social Work in Mental Health*, *13*(4), 299-317.

[30] Merriam, S. B., & Grenier, R. S. (Eds.). (2019). *Qualitative research in practice: Examples for discussion and analysis*. John Wiley & Sons.

[31] Monikandam-Givon, Y. (2021). *Children with disabilities during the Coronavirus crisis*. Knesset Research and Information Center. Knesset, Jerusalem. www.knesset.gov.il/mmm [Hebrew]

[32] Rumrill Jr., P. D., Cook, B. G., & Stevenson, N. A. (2020). *Research in special education: Designs, methods, and applications.* Charles C. Thomas Publishers.

[33] Saunders, B., Sim, J., Kingstone, T., Baker, S., Waterfield, J., Bartlam, B., Burroughs, H. & Jinks, C. (2018). Saturation in qualitative research: exploring its conceptualization and operationalization. *Quality & Quantity, 52*, 1893-1907. https://doi.org/10.1007/s11135-017-0574-8

[34] Sayman, D., & Cornell, H. (2021). "Building the plane while trying to fly:" Exploring special education teacher narratives during the COVID-19 pandemic. *Planning & Changing, 50*(3-4), 191-207.

[35] Sharp Donahoo, L. M., Siegrist, B., & Garrett-Wright, D. (2018). Addressing compassion fatigue and stress of special education teachers and professional staff using

mindfulness and prayer. *The Journal of School Nursing*, *34*(6), 442-448. https://doi.org/10.1177/1059840517725789

[36] Shkedi A. (2011). The meaning behind the words: Methodologies of qualitative research - theory and practice. Ramot Publishers.

[37] Steed, E. A., & Leech, N. (2021). Shifting to remote learning during COVID-19: Differences for early childhood and early childhood special education teachers. *Early Childhood Education Journal, 49*, 789–798. https://doi.org/10.1007/s10643-021-01218-w

[38] Stang-Rabrig, J., Brüggemann, T., Lorenz, R., & McElvany, N. (2022). Teachers' occupational well-being during the COVID-19 pandemic: The role of resources and demands. *Teaching and Teacher Education*, *117*, 103803. https://doi.org/10.1016%2Fj.tate.2022.103803

[39] Stenhoff, D. M., Pennington, R. C., & Tapp, M. C. (2020). Distance education support for pupils with autism spectrum disorder and complex needs during COVID-19 and school closures. *Rural Special Education Quarterly*, *39*(4), 211-219. https://doi.org/10.1177/8756870520959658

[40] Stahnke, B., & Firestone, K. (2024). Beyond secondary trauma: A systematic review of shared trauma research in the US. *Social Work in Mental Health*, *22*(1), 149-169. https://doi.org/10.1080/15332985.2023.2251632

[41] Toquero, C. M. D. (2021). 'Sana All' inclusive education amid COVID-19: Challenges, strategies, and prospects of special education teachers. *International and Multidisciplinary Journal of Social Sciences, 10*(1), 30-51. https://doi: 10.17583/rimcis.2021.6316

[42] Tosone, C., McTighe, J. P., & Bauwens, J. (2015). Shared traumatic stress among social workers in the aftermath of Hurricane Katrina. *British Journal of Social Work, 45*(4), 1313-1329.

[43] Tosone, C. (Ed.). (2020). *Shared trauma, shared resilience during a pandemic: Social work in the time of COVID-19*. Springer Nature.

[44] Yakut A. D. (2021). Educators' experiences in special education institutions during the COVID-19 outbreak. *Journal of Research in Special Educational Needs, 21*(4), 345–354. https://doi.org/10.1111/1471-3802.12533

[45] Webb, C. M., & Carpenter, J. (2012). What can be done to promote the retention of social workers? A systematic review of interventions. *British Journal of Social Work, 42*(7), 1235-1255.

[46] Weissblay, E. (2019). *Survey of the special education system*. Knesset Research and Information Center. Knesset, Jerusalem. www.knesset.gov.il/mmm [Hebrew]

[47] Weissblay, E. (2021). *The education system during the Corona crisis*. Knesset Research and Information Center. Knesset, Jerusalem. www.knesset.gov.il/mmm [Hebrew]

[48] Weidberg, R., & Ceobanu, C. (2021). The relationship between parents and homeroom teacher in special education in Israel. *European Proceedings of Educational Sciences*, 9th International Conference Education, Reflection, Development (ERD 2021), 25 June 2021, Cluj-Napoca, Romania

BILINGUAL PUBLISHING GROUP

Journal of International Education and Practice
https://ojs.bilpubgroup.com/index.php/jiep

ARTICLE

The Effect of Using the CoRT Program on Jordanian EFL Ninth-Grade Students' Speaking Skills

***Badriya Hashim Battah*[1*] *Abdallah Baniabdelrahman*[2]**

[1] *Department of Curriculum and Methods of Instruction, Faculty of Education, Yarmouk University, Jordan*
[2] *Department of Curriculum and Methods of Instruction, Faculty of Education, Yarmouk University, Jordan*

ABSTRACT

This study aimed at exploring the effect of using the CoRT Program on Jordanian EFL ninth-grade students' speaking skills. The participants of study were 68 female students from Maysaloun Basic School for Girls, which is part of the Directorate of Education in Jordan who were distributed randomly and equally into two groups; experimental and control. This study followed a quasi-experimental design. Data were collected through a pre-/post-test for both control and experimental groups. To achieve the purpose of the study, the experimental group was taught though the CoRT Program and the control group was taught using a conventional teaching method. The results showed that showed that there were statistically significant differences at (α= 0.05) in the subscales (Accuracy, Fluency) due to instruction (the CoRT program vs. conventional instruction) in favor of the experiments group. In light of the findings of the study, the study recommends to use the CoRT Program in different EFL skills and different levels of students.

Keywords: CoRT program; EFL Jordanian students; Speaking skills

1 Introduction

Language learning is driven by the need to communicate. These days, written or verbal communication seems to be vital given how quickly the world is expanding. A person who can express ideas, thoughts, and a range of concepts clearly is a good communicator. For most language learners who want to study a foreign language, the general path is to be able to understand others and eventually be understood by them. As the globe has gotten more interconnected, being able to communicate in English has become more crucial for travel, business, and even personal relationships. For these reasons, teaching English today is more challenging than it was in the

*CORRESPONDING AUTHOR:
Badriya Hashim Battah ; Doctoral Candidate, Department of Curriculum and Methods of Instruction, Faculty of Education, Yarmouk University, Jordan; Email: Battahbadriya@yahoo.com.

ARTICLE INFO
Received: 28 May 2024 | Accepted: 6 July 2024 | Published: 22 July 2024
DOI: https://doi.org/10.30564/jiep.v7i2.5551

past. Language teachers must therefore modify their teaching methods. Those methods need to be enhanced to better meet the requirements and interests of the students.

Language is a tool for communication, most of which happens verbally. Speaking is crucial because it enables one to communicate to others their own ideas, thoughts, and feelings. To communicate with one another, people must also be able to speak (Richards, 2008).[42] It is truly necessary to speak fluently in a foreign language in order to comprehend meaning and communicate effectively. While teaching students the speaking skill, it is essential to give them real-world, pertinent possibilities for successful communication in a foreign language (Nematovna, 2016).[37]

It was highlighted that speaking is an essential component of communication (Brown, 2001).[14] It was also described as a process of creating meaning through participation that included information creation, reception, and processing. Speaking is also an essential skill that English language learners must develop, particularly since their ability to communicate verbally is a common standard by which they are judged (Leong & Ahmadi, 2017).[34] It has been stated that speaking is an important yet challenging skill that needs several interrelated components to create and deliver meaningful messages. In order to effectively communicate, students must familiarize themselves with a variety of capabilities (Thornbury, 2005).[45]

Speaking the language correctly and fluently is one of the most important objectives of teaching and learning a foreign language (Brown, 2000).[13] For many people, speaking fluently and accurately is a precondition to learning a foreign language (Burns & Hill, 2013;[15] Srivastava, 2014).[44] More specifically, the development of foreign language speakers who speak the language fluently and with fewer grammar, vocabulary, cohesion, and coherence problems is necessary to reach speaking proficiency (Brown, 2000;[13] Kumar, 2013).[31] For students to function at an exceptional level when speaking, they must possess both accuracy and fluency. Regretfully, few learners of foreign languages will succeed in achieving this objective (Nishanthi, 2018). [38]

The importance of speaking proficiency for other language skills cannot be overstated (Gass & Varonis, 1994). [24] Reading (Garner, 2000),[23] writing (Trachsel & Severino, 2004),[46] and listening can all benefit from improved speaking skills. Efrizal (2012) [21] underlined the significance of speech in casual social encounters, in which people communicate constantly and everywhere. Speaking also helps students improve their grammar and vocabulary, which in turn makes their writing better. Promoting language use in everyday contexts and involving students in the process are essential to encouraging them to communicate in English. Students may express their ideas and emotions, tell stories, make requests, engage in discussions, and use a range of language skills. Speaking is vital both inside and outside of the classroom. As a result, a greater variety of companies and organizations are able to employ qualified speakers. These statements have been supported by Baker and Westrup (2003),[8] who observed that students with strong English proficiency can benefit from increased opportunities for postsecondary education, employment, and career advancement.

Generally speaking, several researchers noted how difficult communication is. Due to their speech difficulties, language learners face considerable obstacles while trying to communicate in a foreign language. Communication difficulties arose when language learners failed to correctly express their concepts or understand the structures and definitions of foreign words and phrases (Bahrani & Soltani, 2012;[6] Kayi, 2006;[28] Nation & Newton, 2009).[36]

Teachers must purposefully devise strategies to provide EFL students with opportunities to practice speaking in pertinent and authentic contexts if they are to teach speaking skills to them effectively (Nematovna, 2016).[37] Teachers should think about fostering a fun and cooperative learning environment in order to support students' oral performance in a formal setting (Leong & Ahmadi, 2017).[34] "When teachers create autonomy-supportive climates in their schools, students can motivate themselves and

internalize their learning goals, and so they become intrinsically motivated to learn English" (Dincer, Yesilyurt, & Takkac, 2012:104)[20] Therefore, learners may be able to overcome difficulties when speaking a foreign language as long as they are studying in an authentic and relevant environment that also permits their enjoyment and interests.

One way to help students become better speakers and participate more in speaking classes is to use communicative activities in foreign language classrooms (Oradee, 2012).[39] As a result, role-playing, simulation, collaborative tasks, games, and other communicative exercises could aid language learners in producing accurate and fluent speech (Kayi, 2006;[28] Klippel, 1984).[30] Batiha, Noor, and Mustaffa (2016)[12] advise offering EFL students with as many opportunities as possible to speak English in a welcoming environment by using motivating techniques like project work and indirect feedback. One way to promote meaningful interactions among EFL learners and improve their speaking skills is to encourage students to have meaningful conversations on interesting issues, as stated by Oradee (2012).[39]

Speaking more accurately and fluently could be greatly enhanced by practice (Brown, 2000).[13] For EFL students to become more proficient speakers, they must engage in explicit activities. Therefore, language learners need plenty of opportunities to develop spoken language in a range of circumstances in addition to utilizing a foreign language. Put another way, learning a language is not likely to improve a person's communication skills on its own. Foreign language learners need to be able to converse in a range of contexts (Bygate, 1987).[16]

Edward De Bono created the CoRT educational program, which teaches thinking skills directly to students. It was first published in 1973 and developed in 2004. The Cognitive Research Trust, which De Bono founded at Cambridge, is known by the acronym (CoRT). CoRT is divided into six sections, with ten lessons in each. Each lesson presents a novel way of thinking. A mix of teacher-led instruction, group work, student-led discussions, individual work, and homework assignments are used to deliver CoRT lessons. In general, the CoRT program seem more appropriate for circumstances involving informal reasoning and decision-making in humanistic, social, and design contexts. They are directly and easily applicable to the kinds of problems that arise in day-to-day living (De Bono, 2007).[19]

Offering students a range of methods and instruments that can help them use a variety of thinking skills is the aim of the CoRT program. Each instrument serves a certain function and is used in a particular manner. A great teacher knows when to use them to achieve the desired outcome(s). The CoRT program provides teachers with a handbook that includes sample lesson plans, test materials, and projects for students to do in order to practice applying these strategies (Mousa, 2022).[35]

The CoRT program is one of the few that assists students in developing their critical thinking skills across a variety of topic areas, claim Al-Faoury and Khwaileh (2014).[4] Participants in this program should be able to use sophisticated stimuli and cognitive processes, as well as put answers or concepts together in fresh ways. The CoRT program assists students in developing lifelong cognitive skills that will deepen and expand their awareness in every situation by utilizing each tool to meet specific demands. Since they will be more confident in their own mental processes and self-aware, students will have a foundation for organizing activities in the classroom. After considering the point of view of everyone involved in the process, the students will concentrate on the goal of the lesson by organizing the discussion.

The CoRT program consists of sixty lessons distributed in six parts, each of which contains ten lessons. Each of the six parts covers a distinct aspect of thinking, and the titles of each section point toward an objective that needs to be achieved by the end of that section (De Bono, 1998).[18] These parts are: breadth, organization, interaction, creativity, information, and action. Interaction (CoRT 3) focuses on encouraging the process of debate and negotiation among students so that they may assess and control their knowledge. At this level of study, some of the

topics covered include verifying the parties, evidence types and values, disagreement, agreement and lack of relationship, being right or incorrect, and the outcome (Alshurman, 2017).[5]

2 Statement of the Problem

Many Jordanian EFL students have been observed to find it difficult to communicate and handle spoken English in the classroom (Bataineh, Rabadi & Smadi, 2013;[11] Al-Garaibeh & AL-Jamal, 2016).[1] The researcher has seen a widespread deficiency in the students' communication skills when speaking English in class, based on her experience teaching English as a foreign language. Furthermore, EFL students typically avoid these types of communicative activities or end the talks when they encounter unfamiliar English language. Oral interactions among EFL learners might fall down for a variety of reasons. These elements could have to do with the EFL students, the atmosphere, the curriculum, or the teaching strategies. Consequently, it's critical that Jordanian EFL students comprehend the advantages of using English for communication (Rababa'h, 2003).[40]

There may be fewer opportunities to speak English in a foreign language situation like Jordan because the official classroom is practically the sole setting where the language is used for practice. Furthermore, it seems that Jordanian English language learners face difficulties while communicating in oral English (Bani-Abdo & Bereen, 2010;[9] Bataineh, Al-Bzour & Baniabdelrahman 2017;[10] Yaseen, 2018).[47] Therefore, it would be especially crucial to take into account communicative activities in the Jordanian context that give EFL learners real and significant opportunities to enhance their speaking accuracy and fluency.

As a result, providing CoRT-based activities (such as the researcher's instructional program) may offer an opportunity to improve speaking skills because it calls for group collaboration and oral presentations of student work in an engaging setting reinforced by the intentional application of the CoRT program. For instance, in the CoRT program, students applied their critical thinking, creativity, teamwork, communication, and oral presenting skills in a real-world environment.

Purpose of the Study

The purpose of the current study is to examine the effect of CoRT program (Interaction unit) on Jordanian EFL ninth-grade female students' speaking skills.

Question of the Study

The study seeks to answer the following research question:

- Are there any statistically significant differences (α=0.05) in the Jordanian EFL ninth-grade students' speaking skills which can be attributed to instruction (the CoRT program vs. conventional instruction)?

Significance of the Study

To the best of the researcher's knowledge, the current study is one of the first in Jordan on the impact of the CoRT program on ninth-grade EFL students' speaking skills, therefore it may be important. The study may be significant to EFL teachers, curriculum designers, supervisors, and trainers who could modify textbooks and instructional practices to incorporate the CoRT program as a means of promoting successful learning. It encourages language teachers in Jordan to employ cutting-edge speaking instruction methods that close the knowledge gap between theory and practice. The findings of this study may potentially prompt further investigation into the possible impact of the CoRT program on language proficiency in other areas, such as critical reading, especially in Jordan.

Operational Definition of Terms

Below is a list of the important terms in this study and their potential definitions:

CoRT Program Which stands for Cognitive Research Trust is "a collection of simple powerful tools

developed by de Bono that allow the students to get rid of the patterns of traditional thinking through seeing things clearly and more comprehensive which can help thinking, problem solving, and decision-making" (De Bono, 2007:12).[19] In this study, the CoRT program is a set of procedures and practices that are planned in advance by the researcher which aim at developing the speaking skills.

Interaction Unit helps students observe thinking involved in discussions, how a point of view is presented or defended, and the value and types of evidence (Salih, 2016).[43]

Speaking is the act of expressing ideas, feelings, and thoughts into words. It is also known as oral communication. Furthermore, speaking proficiency is a skill that encompasses many other components and subcategories, such as fluency, grammar, pronunciation, vocabulary, and comprehension (Brown, 2001).[14] In this study, "speaking skill" refers to students' ability to speak English accurately and fluently. Additionally, the speaking rubric will assess speaking skills based on the entirety of a set of criteria that align with Jordanian norms for teaching English to ninth-graders.

Accuracy is the extent to which students' speech corresponds with what real people say when they use the target language (Bailey, 2005).[7] Additionally, it implies that students must practice pronouncing phrases correctly and utilizing word structures (Lackman, 2010).[33]

Fluency is the extent to which speakers utilize the language with confidence and speed, exhibiting no hesitation or artificial pauses, false stars, or word searches (Bailey, 2005).[7] According to Lackman (2010),[33] fluency is also the ability that allows students to practice speaking intelligibly and spontaneously without prior preparation or practice.

The speaking pre-/post-test, which was designed by the researcher to assess the students' competency with grammar and vocabulary, was used in this study to measure speaking fluency and accuracy among female EFL students from Jordan. Here, correctness is defined as employing proper grammar and vocabulary, and fluency as speaking the language in a natural flow. Using Harris's (1977)[25] rubric (see Appendix), students were graded based on their vocabulary, grammar accuracy, and speaking fluency.

Limitations of the Study

The generalizability of the results of this study may be limited due to the following factors:

1. The study concentrated on ninth-grade students at the public Maysaloun Basic School for Girls in Irbid during the second semester of the 2022–2023 school year. The results might have been more widely relevant if the study had concentrated on different grades and schools.
2. The duration of treatment could only last for eight weeks. Different outcomes could have been obtained with a longer time frame.
3. The textbook used in Jordanian public schools is Action Pack 9 (modules 4, 5, and 6). Different materials and texts might yield different results.
4. The study was limited to the interaction unit, or one section of the CoRT Program.

3 Review of Related Literature

Following a review of previous studies on education, the researcher gathered studies pertinent to this study.

Byrnes and Wasik (2005)[17] investigated how well a group of seventh-grade students' critical thinking abilities were improved by CoRT-based instruction. An assessment of critical thinking was used to gather data. As students who received CoRT-based instruction outperformed those who did not, indicating the program's potential efficacy in growing teenagers' cognitive skills, this study adds to our understanding of how a CoRT program might increase critical thinking. The findings demonstrated that there are statistically significant variations in seventh-grade students' critical thinking with respect to the methods of instruction and the CoRT-based curriculum.

Kim and Park (2010)[29] looked into how a CoRT program affected a sample of Korean high school

students' ability to solve problems. Data were gathered using a pre- and post-test. Findings demonstrated that students who underwent CoRT training significantly improved their problem-solving abilities, underscoring the usefulness of the curriculum designed to address learning difficulties and enhance cognitive abilities.

Al-Edwan (2011)[2] investigated how well a CoRT-based training program developed students' critical thinking in the seventh grade. A training program based on CoRT program was created in order to accomplish this goal. 163 male and female seventh-grade students from Amman participated. An assessment of critical thinking was used to gather data. The findings demonstrated statistical variations in seventh-grade students' critical thinking in relation to the training program's approach, which is based on CoRT program techniques, and the teaching style.

Al-Faoury and Khwaileh (2014)[3] looked into how teaching the CoRT Program affected the creative writing skills of gifted students. Thirty-six students from the Ein El-Basha Center for Gifted students participated. For both groups, a pre- and post-test measuring originality, adaptability, and fluency was given. The findings demonstrated that the experimental group's mean score on fluency, flexibility, and originality was significantly higher than the control group's mean score. This suggests that the CoRT Program No. 4, "Creativity," fostered the gifted learners' creative writing skills in English short stories.

Kumari and Gupta (2014)[32] explored the relationship between De Bono's CoRT thinking program and concept map performance in ninth and tenth-grade students, taking into account their intelligence level. There were two identical groups, each with 51 responders. The CoRT Thinking Program significantly affects concept map performance, according to the results. It has also been discovered that IQ significantly influences a few idea map performance components.

Hmeadat (2016)[27] looked into how the CoRT program's thinking skills development affected the English language proficiency of Jordanians studying the language. There were eighty-six seventh-grade Zarqa students present. Four groups of participants were formed. Thirty-four male students, divided into two experimental groups, were taught two curriculum units (Aim High1) via the CoRT program. Thirty-four male students from the other two control groups received the same instruction using the traditional method. Information was gathered via an accomplishment test. Results revealed that there were statistically significant differences between the mean scores of the participants of the experimental groups who studied through the CoRT as a new instructional model and the control group who studied through the conventional method in favor of the experimental groups.

Rahman and Khan (2016)[41] investigated how a CoRT program affected Bangladeshi students' capacity for making decisions. Students showed that their decision-making abilities have improved by using the program's resources. In line with the overarching objective of enhancing cognitive abilities and effective communication, this study places a strong emphasis on the real-world application of CoRT concepts to enhance decision-making abilities.

Salih (2016)[43] looked at how the CoRT program affected Iraqi college students' performance in English reading comprehension. There were fifty-one first-year students involved. An achievement test in reading comprehension was used to gather data. The results showed that the experimental group, which is receiving instruction via the CoRT program, has a statistically significant advantage over the other group in terms of mean score.

Alshurman (2017)[5] looked into how the CoRT program for teaching thinking affected the growth of communication abilities. 36 university students from various specializations and academic levels participated (20 girls and 16 males). The researcher created a communication skills measure and a training program. Data were gathered using a pre- and post-test. The experimental group, which is taught via the CoRT program, benefited from the considerable differences between the experimental and control groups, according to the results.

El-Sherbeny (2019)[22] investigated how the CoRT program affected high school students' growth as creative writers. Data from a pre- and post-test were gathered. Although it takes time, practice, experience, and instructor guidance, the curriculum is effective in boosting creative writing skills, as demonstrated by the large difference in the experimental group's outcomes.

Hassan and Othman (2019)[26] looked into how a CoRT program affected Malaysian primary school students' capacity for creative thought. The outcome showed that kids who engaged in CoRT-based activities significantly improved their creativity scores, demonstrating the program's capacity to foster creative thinking and its applicability to young learners.

Mousa (2022)[35] investigated the role of the CoRT program for the development of thinking skills on the achievement of Iraqi English language learners (ELLs). Sixty female students from Iraq's Al-Maysaloon school participated. While the control group's students are taught using traditional methods, the experimental group's students are taught using the CoRT program. Data were gathered using a pre- and post-test. The experimental group, which is taught via the CoRT program, benefited from the considerable differences between the experimental and control groups, according to the results.

4 Concluding Remarks

The conclusion that the CoRT Program is effective was reinforced by an examination of related literature on the subject of teaching speaking skills using the CoRT Program. It inspired students to learn more effectively, but the researcher saw that, as far as she knew, no research had been done on the topic in Jordan. The literature review assisted in clearing the path and establishing the groundwork for the researcher's goals with this work.

In terms of this study's theoretical significance, other researchers looking into this subject could find it useful. The lack of research in Jordan could be a barrier to the advancement of teacher preparation programs and English curriculum, given the ongoing and rapid changes in teaching and learning.

Numerous research has been conducted to look at how the CoRT Program affects EFL learners. Nevertheless, not much research has been done on Arab students of English. There haven't been any studies done to look at how the CoRT Program has affected the speaking skills of Jordanian students. This study is distinct from others since it looked at how the CoRT Program affected the speaking skills of female ninth-grade students at a public school. This study hopes to fill the gap in related literature.

Method and Procedures

Design and Variables of the Study

The design of the current study was quasi-experimental. The independent variable is the teaching strategies: CoRT program vs conventional instruction. The students' performance on the speaking post-test is the dependent variable.

Participants of the Study

Students in the ninth grade from Maysaloun Basic School for Girls, which is a part of Jordan's Directorate of Education, participated in the study. The current study was conducted during the first semester of the 2023–2024 school year. The researcher randomly allocated two intact sections of ninth-grade students out of three sections from the school. Thirty people made up each of the experimental and control groups. The experimental group received instruction in the Action Pack 9 speaking skills through the CoRT program (interaction unit), whereas the control group followed the instructions in the teacher's book.

Research Instrument

The speaking pre-/post-test was designed with the study's goals in mind. The following is the instrument's description:

The Pre-/Post-test for Speaking Skills

The ninth-grade students' speaking fluency and vocabulary and grammar accuracy were to be evaluated using a speaking test. The researcher prepared

the speaking test based on the speaking activities of the Modules of Action Pack 9 understudy (Viz. 4, 5, and 6), to make sure the content could be understood by the participants. There were three sections to the test, and a final score of 25 was assigned.

Part One: *Asking and answering questions lasted for 5 minutes (10 points)*

Part Two: *Talking about Money lasted for 3 minutes (8 points)*

Part Three: *Giving opinions lasted for 2 minutes (7points)*

The pre-/post-test was administered using the same test. The purpose of the pre-test is to gauge the participants' speaking skills prior to the treatment, and the post-test assesses how well the CoRT-based instructional program has affected the participants' speaking fluency and vocabulary and grammar accuracy. Each student tested alone in order to avoid any distractions.

The Speaking Test Rubric

The five-point analytical rubric known as the Rubric Score of the Speaking Test, proposed by Harris (1977),[25] was used by the researcher to gauge the degree of progress made in speaking vocabulary, grammar, and fluency. Every criterion has a grading system with five points: 1 for poor, 2 for fair, 3 for good, 4 for very good, and 5 for excellent. This rubric was used to rectify the participants' responses, and the test's three speaking skills were added to determine the final grade.

Validity of the Speaking Test

The test was initially submitted to the same jury that approved the educational program in order to guarantee its authenticity. The jury members were requested to provide feedback regarding the test's appropriateness, clarity, and question content in relation to the participants' skill levels. Suggestions about the instruments included, for example, paying close attention to the speaking test's content and ensuring that it aligns with the program's subject and goals. The researcher made the changes in accordance with the jury's recommendations. Regarding the rubric, the jury suggested that it be appropriate for the educational setting in Jordan. As a result, the researcher used it to accomplish the study's goals.

Reliability of the Speaking Test

Using the test-retest procedure, which involved administering the test to a pilot sample of twenty students chosen from the original sample and the same population again after a two-week interval, the test's reliability was confirmed. Pearson Correlation was calculated between their scores on the test which was (0.89). Additionally, the Kuder Richardson-20 Coefficient (0.85) for internal consistency reliabilities was determined. It should be highlighted that these values are suitable for achieving the study's goals.

Instructional Program

To achieve the goals of the study, the researcher created a CoRT-based instructional program to help participants become more proficient speakers. Additionally, when the researcher revised the speaking tasks in modules (4, 5 & 6), the participants in the experimental group participated in a CoRT program throughout their speaking sessions.

The Instructional Material

The Student's Book of Action Pack 9's speaking exercises from modules 4, 5, and 6 serve as the foundation for the instructional materials utilized. The researcher modified these exercises in accordance with the CoRT program (interaction unit) to instruct the experimental group participants in speaking skills.

Validity of the Instructional Program

To verify the program's validity, the researcher brought it before a panel of eleven English curriculum and teaching experts. Regarding the accessible program, the jury was requested to assess the programs and offer any comments or suggestions to the researcher. The researcher made the recommended adjustments and did as directed.

Teaching Methods for the Two Study Groups

Teaching the Experimental Group (Using the CoRT Program):

1. Preparation:

- Select relevant CoRT unit (interaction) that match with the curriculum and learning outcomes.
- Prepare pre-speaking activities to activate prior knowledge and introduce key vocabulary related to the CoRT unit.

2. Introduction to the CoRT Program: Explain the purpose of using the CoRT program in the speaking activities and how they can enhance language learning.

3. During- Speaking Tasks:

Introduce during-speaking activities, such as note-taking or answering comprehension questions while presenting the CoRT program.

Encourage students to engage actively with the content and take notes on important points.

4. Post-Speaking Activities:

Conduct post-speaking discussions, where students share their reflections on the CoRT program's content and main points of presentations.

Organize speaking activities based on the CoRT program, such as debates, idea management, role plays, or group discussions, to encourage students to practice speaking communication skills.

5. Assessment:

Evaluate students' speaking skills through various activities and assignments related to the CoRT program.

Use rubrics to assess their fluency, and accuracy in grammar and vocabulary to express ideas effectively.

Teaching the Control Group

1. Preparation:

- Follow the guidelines provided by the Ministry of Education for teaching speaking skills.
- Prepare relevant speaking activities and materials based on the prescribed curriculum.

2. Introduction to Speaking Activities: Explain the purpose of the speaking activities and how they match with the language learning outcomes.

3. During-Speaking Activities:

- Engage students in pair work or group discussions to practice speaking.
- Provide prompts or discussion topics based on the curriculum guidelines.

4. Post-Speaking Activities: Organize post-speaking activities, such as presentations or debates, to further develop speaking skills.

5. Assessment: Assess students' speaking skills through observations during speaking activities and formal assessments, such as oral exams or presentations.

5 Results

In order to answer the question of the study, that is: "Are there any statistically significant differences (α=0.05) in the Jordanian EFL ninth-grade students' speaking skills which can be attributed to instruction (the CoRT program vs. conventional instruction)?", ANCOVA and MANCOVA test was used, to implement ANCOVA and MANCOVA tests, multiple assumptions needed to be checked including linearity. In fact, there is a linear relationship between the outcome (post-test results) and the covariate (pre-test results). The researcher conducted a test of normality and the Table below shows significant value of normality in Kolmogorov-Smirnov normality test.

Table 1: Normality Test for Pre and Post Speaking Tests

	Experimental		**Control**	
	Kolmogorov-Smirnov Z	**Asymp. Sig. (2-tailed)**	**Kolmogorov-Smirnov Z**	**Asymp. Sig. (2-tailed)**
Accuracy pre	.980	.292	.824	.505
Fluency pre	.825	.504	.767	.599
Pre-test	.730	.660	.496	.967
Accuracy post	1.098	.179	.895	.399
Fluency post	1.224	.100	.797	.548
Post-test	1.162	.134	.482	.975

A final assumption which needed to be checked before conducting ANCOVA and MANCOVA was the assumption of homogeneity of variance. The researcher calculated the Levene's Test of Equality of Error Variances of the means of both groups, results showed homogeneity of variance ($p=0.901 > 0.05$), hence the assumption of homogeneity has not been violated.

Table 2: Levene's Test of Equality of Error Variances

	F	df1	df2	Sig.
Accuracy	.694	1	58	.408
Fluency	.309	1	58	.581
Total score	.016	1	58	.901

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a Design: Intercept+a1+a2+group

As the assumptions of ANCOVA MANCOVA were met, the researcher conducted the test and concluded the following results.

Means and standard deviations and estimated marginal means of Jordanian EFL ninth-grade students' speaking skills, due to instruction (the CoRT program vs. conventional instruction) are shown in Table below.

Table 3 shows a slight variance in the means of the control group and the experimental group in the post-test due to instruction (the CoRT program vs. conventional instruction), to find out whether there are statistically significant differences in these means, one way ANCOVA was conducted and the results are shown in Tables 4.

Table 3: Means, Standard Deviations and Estimated Marginal Means of Jordanian EFL Ninth-Grade Students' Speaking Skills due to Instruction (the CoRT Program vs. Conventional Instruction)

Group	N	Pre		Post		Estimated Marginal Means	Std. Error
		Mean	Std. Deviation	Mean	Std. Deviation		
CoRT program	30	10.00	2.983	19.33	2.339	19.282	.365
conventional	30	9.83	3.405	11.13	3.181	11.184	.365

Table 4: One Way ANOCVA Results of Jordanian EFL Ninth-Grade Students' Speaking Skills in the Post Test Related to Instruction (the CoRT Program vs. Conventional Instruction)

Source	Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Pre-test (covariate)	223.812	1	223.812	55.874	.000	.495
instruction	982.904	1	982.904	245.380	.000	.811
Error	228.321	57	4.006			
Corrected Total	1460.733	59				

Table 4 shows there are statistically significant differences at ($\alpha= 0.05$) in Jordanian EFL ninth-grade students' speaking skills due to instruction (the CoRT program vs. conventional instruction) in favor of Experimental group (CoRT program).

Means and standard deviations and estimated marginal means of speaking skills (sub scales) that are attributed to the instruction (the CoRT program vs. conventional instruction) are shown in Table below:

Table 5 shows a slight variance in the means of speaking skills (subscales) attributed to instruction (the CoRT program vs. conventional instruction), to find out whether there are statistically significant differences in these means, one way MANCOVA was conducted and the results are shown in Table 6.

Table 6 shows there are statistically significant differences at ($\alpha= 0.05$) in the subscales (Accuracy, Fluency) due to instruction (the CoRT program vs. conventional instruction) in favor of the CoRT program.

Table 5: Means, Standard Deviations and Estimated Marginal Means of Speaking Skills (subscales) Attributed to Instruction (the CoRT Program vs. Conventional Instruction)

	Group	N	Pre		Post		Estimated Marginal Means	Std. Error
			Mean	Std. Deviation	Mean	Std. Deviation		
Accuracy	Experimental	30	4.07	1.258	7.70	1.179	7.675	.161
	Control	30	3.93	1.552	4.43	1.305	4.458	.161
Fluency	Experimental	30	5.93	1.964	11.63	1.608	11.628	.257
	Control	30	5.90	2.023	6.70	1.968	6.705	.257

Table 6: One Way MANCOVA Results of (sub scales) Scores Related to the CoRT Program

Source	Dependent Variable	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
PRE Accuracy (COVARIATE)	Accuracy post	4.551	1	4.551	5.830	.019	.094
PRE Fluency (COVARIATE)	Fluency post	37.377	1	37.377	18.866	.000	.252
GROUP Hotelling's Trace= 4.630 P=.000	Accuracy post	154.636	1	154.636	198.087	.000	.780
	Fluency post	362.133	1	362.133	182.784	.000	.765
Error	Accuracy post	43.716	56	.781			
	Fluency post	110.948	56	1.981			
Corrected Total	Accuracy post	249.733	59				
	Fluency post	552.333	59				

6 Discussion

The results showed that there are statistically significant differences at (α= 0.05) in the subscales (Accuracy, Fluency) due to instruction (the CoRT program vs. conventional instruction) in favor of the CoRT program. Hence, the CoRT program can be used as an instructional model for students to develop their speaking skills especially in term of fluency and accuracy.

The improvement seen in the experimental group could have numerous explanation. One of them may have to do with the structure of the CoRT-based instructional program, which was designed to be adaptable enough to meet the needs and demands of various student levels. The way that students engaged with one another was significantly improved by this teaching model. The instructional program was composed of a set of deliberate and exact stages based on learning objectives. Thus, the major goal of each speaking exercise in the curriculum was to improve speaking skills by promoting the exchange of ideas on a variety of topics. The evaluation of the students' verbal skills, which pointed out their strong and weak points and offered suggestions for improvement, was also shared with the participants. As a result, the teacher advised the students to focus on their objective and give a speech that was appropriate with all of their might.

A further explanation for the students' improved speaking skills could be found in the way the curriculum prioritized collaboration. As a result of cooperating to achieve an objective that symbolized their combined efforts, the students gained practice communicating with intention and meaning. Empirical studies have consistently shown that gaining foreign language ability requires meaningful participation and teamwork.

The fact that the program was created with learner-centered activities in mind could be a further explanation for the students' enhanced communication skills. As a result, the students had the opportunity to think critically about their own performances, make oral presentations, participate in group decision-making, and explore the topics in their own terms. Consequently, a plethora of options were pre-

sented to maximize the duration allocated for student speech in comparison to instructor speech, perhaps positively influencing students' inclination to employ more oral language in the classroom.

The curriculum's self-learning exercises could lead students closer to self-directed learning, which could improve their speaking skills as well. For example, students are required to acquire the concepts taught in the curriculum themselves. Students were also encouraged to participate by offering their opinions on topics covered in the program, which helped to increase their confidence in speaking about topics they had independently witnessed and comprehended. Through the incorporation, motivation, and integration of a range of speaking tasks, the CoRT program seeks to assist students in refining their speaking abilities. Furthermore, the researcher employed an assortment of tasks and assignments to elicit responses from the pupils, either singly or collectively.

7 Conclusion

Given that the CoRT program helped students learn language, it could be said that utilizing it to teach speaking skills was a useful and successful model. Furthermore, by using this educational model, students can gain real-world language experience, enhance their speaking skills, and become more motivated and involved. Following the use of the CoRT program, the teaching-learning process for the students' speaking skills improved somewhat.

Recommendations

Based on the results, the following recommendations are presented for EFL teachers, EFL supervisors, EFL textbook writers and policy makers, MoE, and other researchers.

- The CoRT program is an extremely effective teaching model that facilitates students' participation in the teaching-learning process and helps them speak more clearly. It is therefore suggested that EFL teachers make use of it.
- EFL teachers are urged to adapt this instructional model for use in speaking exercises and examine if the content can be changed to better fit their students' language competence.
- EFL supervisors should educate themselves on the advantages of using the CoRT program in the classroom and the importance of incorporating its protocols into speaking activities. The application of this model may improve the students' involvement, comprehension of the subject matter, and participation.
- It is recommended that writers of EFL textbooks and policymakers clearly integrate the CoRT program steps into the Teachers' Book and the Students' Book by providing a variety of speaking-skills-oriented teaching and learning activities. Incorporating the CoRT program into EFL lessons is a good way to develop speaking skills.
- It is recommended that the Ministry of Education establish training courses to provide EFL teachers with methods and role models for teaching speaking that fill in any gaps in textbooks and cater to the needs and preferences of the learners.
- It is recommended that future researchers conduct more research on how the CoRT program affects other English language proficiency areas.

References

[1] Al Garaibeh, S., & Al-Jamal, D. (2016). Communication Strategies for Teachers and their Students in an EFL Setting. *International Journal of Bilingual & Multilingual Teachers of English, 4*(1), 33-44.

[2] Al-Edwan, Z. (2011). The Effectiveness of a Training Program Based on Cognitive Research Trust Strategies to Develop Seventh Grade Students' Critical Thinking in History Course. *Journal of Social Sciences, 7*(3), 436.

[3] Al-Faoury, O., & Khwaileh, F. (2014). The Effect of Teaching CoRT Program No. (4) Entitled" Creativity" on the Gifted Learners' Writings in Ein El-Basha Center for Gifted Stu-

dents. *Theory & Practice in Language Studies, 4*(11), 2249-2257.

[4] Al-Faoury, O., & Khwaileh, F. (2014). The Effect of Teaching CoRT Program No. (4) Entitled" Creativity" on the Gifted Learners' Writings in Ein El-Basha Center for Gifted Students. *Theory & Practice in Language Studies, 4*(11).

[5] Alshurman, W. (2017). The Effects of the First Part of the CoRT Program for Teaching Thinking (BREADTH) on the Development of Communication Skills among a Sample of Students from Al al-Bayt University in Jordan. *Educational Research and Reviews, 12*(2), 73-82.

[6] Bahrani, T., & Soltani, R. (2012). How to Teach Speaking Skill? *Journal of Education and Practice, 3*(2), 25–30.

[7] Bailey, K. (2005). *Practical English Language: Teaching Speaking*. New York: McGraw-Hill.

[8] Baker, J., & Westrup, H. (2003). *Essential Speaking Skills*. A&C Black.

[9] Bani-Abdo, I., & Breen, G. (2010). Teaching EFL to Jordanian Learners: New Strategies for Enhancing English Acquisition in a Distinct Middle Eastern Student Population. *Creative Education, 1* (1), 39–50.

[10] Bataineh, R., Al-Bzour, W., & Baniabdelrahman, A. (2017). On the Teachability of Communication Strategies to Jordanian EFL Beginners: Exploration and Reflection. *International Online Journal of Education and Teaching, 4*(3), 213-227.

[11] Bataineh, R., Rabadi, R., & Smadi, O. (2013). Fostering Jordanian University Students' Communicative Performance Through Literature-Based Instruction. *TESOL Journal, 4*(4), 655-673.

[12] Batiha, J., Noor, N., & Mustaffa, R. (2016). Speaking Anxiety Among English as a Foreign Language Learner in Jordan. *International Journal of Education and Research, 4*(10), 63–82.

[13] Brown, H. (2000). *Teaching by Principles*. White Plains, New York: Longman.

[14] Brown, H. (2001). *Teaching by Principles: An Interactive Approach to Language Pedagogy (2nd ed.)*. New York, NY: Addison Wesley Longman.

[15] Burns, A., & Hill, D. (2013). Teaching Speaking in a Second Language. In B. Tomlinson (Ed). *Applied Linguistic Materials Development* (pp. 231-251). London: Bloomsbury. Business Dictionary. (2020).

[16] Bygate, M. (1987). *Speaking*. Oxford: Oxford University Press.

[17] Byrnes, L., & Wasik, B. (2005). Enhancing Critical Thinking Skills with CoRT-Based Instruction. *Educational Psychology Quarterly, 29*(2), 187-201.

[18] De Bono, E. (1998). Creative thinking. *Global Management*, 17-22.

[19] De Bono, E. (2007). *A series of CoRT Program for Teaching Thinking*. Amman, Jordan: De Bono for Printing and Publishing.

[20] Dincer, A., Yesilyurt, S., & Takkac, M. (2012). The effects of autonomy-supportive climates on EFL learner's engagement, achievement and competence in English speaking classrooms. *Procedia - Social and Behavioral Sciences*, *46*, 3890–3894. https://doi.org/10.1016/j.sbspro.2012.06.167

[21] Efrizal, D. (2012). Improving Students' Speaking through Communicative Language Teaching Method at Mts Ja-alhaq, Sentot Ali Basa Islamic Boarding School of Bengkulu, Indonesia. *International Journal of Humanities and Social Science, 2*(20), 127-134.

[22] El-Sherbeny, T. (2019). Developing Creative Writing Skills with CoRT Program: A Quasi-Experimental Study. *Journal of Creative Writing Education, 12*(4), 321-335.

[23] Garner, I. (2000). Problems and Inconsistencies with Kolb's Learning Styles. *Educational Psychology, 20*(3), 341-348.

[24] Gass, S., & Varonis, E. (1994). Input, Interaction, and Second Language Production. *Studies in Second Language Acquisition, 16*(3), 283-302.

[25] Harris, D. (1977). *Testing English as A Second Language*. Bombay, Tata McGraw- Hill Publishing Company Ltd.

[26] Hassan, A., & Othman, N. (2019). Enhancing Creative Thinking Skills with CoRT Program in Primary School Students. Creative Education, 11(6), 753-765.

[27] Hmeadat, S. (2016). The Effect of the Cognitive Research Trust Program for Development of Thinking Skills on the Achievement of the Jordanian English language learners. *The Arab Journal of Sciences and Research Publishing, 2*(1), 442-450.

[28] Kayi, H. (2006). Teaching Speaking: Activities to Promote Speaking in a Second Language. *The Internet TESL Journal, XII* (11), 1-7.

[29] Kim, H., & Park, S. (2010). The Effects of CoRT Program on Problem-Solving Skills in High School Students. *Journal of Cognitive Education and Psychology, 9*(3), 367- 380.

[30] Klippel, F. (1984). *Keep Talking: Communicative Fluency Activities for Language Teaching*. Avon: The Bath Press.

[31] Kumar, T. (2013). Teaching Speaking: From Fluency to Accuracy. *The Journal of English language Teaching, LV* (6), 16-2.

[32] Kumari, S., & Gupta, K. (2014). Effectiveness of Creativity Training Program on Concept Map Performance of Secondary School Students. *Int. J. Interdisciplinary Multidisciplinary Stud, 1*(5), 127-131.

[33] Lackman, K. (2010*). Teaching Speaking Sub-Skill: Activities for Improving Speaking Skill.* Ken Lackman and Associates: Educational Consultant.

[34] Leong, L., & Ahmadi, S. (2017). An Analysis of Factors Influencing Learners' English Speaking Skill. *International Journal of Research in English Education, 2*(1), 34-41.

[35] Mousa, M. (2022). The Role of the Cognitive Research Trust (CORT) Program as a New Instructional Model for Developing Thinking Skills.v*Journal of Language Studies, VI* (1), 63-48.

[36] Nation, I., & Newton, J. (2009). *Teaching ESL/ EFL listening and speaking*. New York: Routledge.

[37] Nematovna, F. (2016). Activities to Promote Speaking in a Second Language. *Новейшие Научные Достижения*, 1, 1–8.

[38] Nishanthi, R. (2018). Important of learning English in today World. *International Journal of Trend in Scientific Research and Development (IJTSD), 3*(1), 871-874.

[39] Oradee, T. (2012). Developing Speaking Skills Using Three Communicative Activities (Discussion, Problem-Solving, and Role Playing*). International Journal of Social Science and Humanity, 2*(6), 533-535.

[40] Rababah, G. (2003). Communication and Linguistic Problems Facing Arab Learners of English. *Indian Journal of Applied Linguistics, 29*(1), 127-42.

[41] Rahman, A., & Khan, S. (2016). Enhancing Decision-Making Skills with CoRT Program. *Journal of Educational Psychology, 42*(3), 265-280.

[42] Richards, J. (2008). *Teaching Listening and Speaking: From Theory to Practice*. New York: Cambridge University Press.

[43] Salih, O. (2016). The Effectiveness of CoRT1 (Breadth) Program in Developing the Achievement of 1st Year University Students in English Reading Comprehension. *Journal of Tikrit university for humanities, 23*(8), 39-56.

[44] Srivastava, S. (2014). Accuracy vs Fluency in English Classroom. *New Man International Journal of Multidisciplinary Studies, 1*(4), 55–58.

[45] Thornbury, S. (2005). *How to Teach Speaking*. Longman Pearson.

[46] Trachsel, M., & Severino, C. (2004). *The Challenges of Integrating and Balancing Speaking and Writing in First-Year Rhetoric Classes*.

[47] Yaseen, N. (2018). *Factors Negatively Affecting EFL Learners' Speaking Skills at Jordanian Private Schools*. Unpublished Master's Thesis. Middle East University, Amman. Jordan.

Appendix

A Scoring Rubric Proposed by Harris (1977)

Fluency	Accuracy of Grammar	Accuracy of Vocabulary	Points
Speech as fluent and efforts less as that of native speaker.	Make few (if any) noticeable errors of grammar and word order.	Use of vocabulary and idioms is virtually that of native speaker.	**5**
Speed of speech seems to be slightly affected by language problem.	Occasionally makes grammatical and or word orders errors that do not, however obscure meaning.	Sometimes uses inappropriate terms and must rephrases ideas because of lexical and equities.	**4**
Speed and fluency are rather strongly affected by language problem.	Make frequent errors of grammar and word order, which occasionally obscure meaning.	Frequently uses the wrong words conversation somewhat limited because of inadequate vocabulary.	**3**
Usually hesitant, often forced into silence by language limitation.	Grammar and word order errors make comprehension difficult, must often rephrases sentence.	Misuse of words and very limited vocabulary makes comprehension quite difficult.	**2**
Speech is so halting and fragmentary as to make conversation virtually impossible.	Errors in grammar and word order, so, severe as to make speech virtually unintelligible.	Vocabulary limitation so extreme as to make conversation virtually impossible.	**1**

BILINGUAL PUBLISHING GROUP

Journal of International Education and Practice
https://ojs.bilpubgroup.com/index.php/jiep

ARTICLE

The Place of Modern Instructional Materials in Teaching and Learning of Primary Education in Anambra State

Ifeoma Chinyere Umeji*

Department of primary education, school of early childhood care and primary education, Nwafor Orizu College of Education Nsugbe, Anambra state, Nigeria

ABSTRACT

This study examines the place of modern instructional materials in the teaching and learning of primary education in Anambra State, Nigeria. The study employed a descriptive survey design in Anambra State, Nigeria, targeting lecturers in tertiary institutions. Data collection used a validated questionnaire distributed via Google Forms, yielding 50 responses. Analysis involved calculating weighted mean scores, ensuring robustness. Google Survey facilitated efficient data management, enhancing credibility. Rigorous validation and reliability testing ensured research integrity, adhering to best practices in educational research. The findings reveal that modern instructional materials such as audio and video recorders, projectors and digital boards, digital cameras and scanners, as well as maps and charts, are widely available in primary education classrooms. However, their effective integration into pedagogical practices varies among educators, with some demonstrating regular use while others face challenges in incorporating these materials into their teaching. Despite these challenges, the study highlights the positive influence of modern instructional materials on students' learning outcomes, including improved comprehension of difficult concepts, increased interest and retention in subjects, and enhanced overall learning experiences.

Keywords: Modern instructional materials; Teaching; Learning; Primary education

1 Introduction

In the dynamic landscape of primary education, the integration of modern instructional materials has become increasingly vital in fostering effective teaching and enhancing student learning experiences. Modern instructional materials refer to a diverse range of resources and tools utilized in educational settings to enhance teaching and learning experiences (Chigbu

*CORRESPONDING AUTHOR:
Ifeoma Chinyere Umeji, Department of primary education, school of early childhood care and primary education, Nwafor Orizu College of Education Nsugbe, Anambra state, Nigeria; Email: ifeoma.umeji2020@gmail.com.

ARTICLE INFO
Received: 10 May 2024 | Accepted: 24 August 2024 | Published: 20 September 2024
DOI: https://doi.org/10.30564/jiep.v7i2.5564

& Adamu, 2023).[8] These materials leverage technology, multimedia, and interactive elements to engage students, facilitate comprehension, and promote active participation. Examples include audiovisual aids like projectors and digital boards, digital resources such as interactive software and online simulations, and hands-on manipulatives (Issah et al, 2024).[16] Modern instructional materials cater to diverse learning styles, foster critical thinking skills, and support personalized learning, ultimately contributing to improved academic outcomes and the holistic development of learners in contemporary educational environments.

Modern instructional materials play a crucial role in addressing the diverse learning needs of primary school students. They offer educators innovative ways to deliver content, cater to different learning styles, and create dynamic learning environments that stimulate curiosity and critical thinking (Ile & Ikechukwu, 2020).[15] By incorporating multimedia resources such as videos, interactive software, and digital simulations, teachers can bring abstract concepts to life and make learning more accessible and engaging for students (Artal-Sevil et al, 2018).[5] Furthermore, modern instructional materials promote active learning by encouraging students to participate actively in the learning process. Interactive whiteboards, digital games, and hands-on manipulatives provide opportunities for students to explore, experiment, and collaborate with their peers, fostering a deeper understanding of concepts and promoting the development of essential skills such as problem-solving and creativity (Hsia et al, 2021).[12]

The integration of modern instructional materials has transformed teaching practices in primary education classrooms. Educators are no longer confined to traditional chalk-and-talk methods but can leverage a wide array of resources to deliver engaging and interactive lessons. Audiovisual aids such as projectors and digital boards enable teachers to present information in a visually stimulating manner, while digital textbooks and online resources offer customizable and interactive learning experiences tailored to individual student needs (Tang et al, 2020).[26] Moreover, modern instructional materials facilitate differentiated instruction, allowing teachers to adapt their teaching strategies to accommodate diverse learning styles and abilities. For example, teachers can use multimedia presentations, audio recordings, and interactive quizzes to provide additional support for struggling students or challenge advanced learners (Kim et al, 2019).[18] This personalized approach to instruction promotes inclusivity and ensures that all students have the opportunity to succeed.

The use of modern instructional materials has been shown to have a positive impact on student learning outcomes in primary education. Research indicates that students who are exposed to multimedia resources and interactive learning materials demonstrate higher levels of engagement, motivation, and academic achievement (Dunn & Kennedy, 2019).[10] For example, a study conducted by Smeda et al, (2014)[25] found that primary school students who used digital storytelling tools to create multimedia presentations showed significant improvements in reading comprehension and language skills. Furthermore, modern instructional materials facilitate deeper learning and long-term retention of knowledge by providing students with opportunities for active exploration and discovery. Hands-on activities, virtual simulations, and interactive games encourage students to apply their knowledge in real-world contexts, reinforcing concepts and promoting deeper understanding (Braun, 2019).[7] As a result, students are better equipped to transfer their learning to new situations and demonstrate mastery of essential concepts and skills.

Despite the numerous benefits of modern instructional materials, their effective integration into primary education classrooms is not without challenges. Limited access to technology, inadequate training for teachers, and digital divide issues are significant barriers that hinder the widespread adoption of these resources, particularly in resource-constrained settings (Artal-Sevil et al, 2018).[5] The study therefore is crucial due to several reasons. Firstly, Anambra State, like many regions in Nigeria, faces challenges in its educational system, including resource con-

straints and outdated teaching methods. Although the research by Ile and Ikechukwu (2020)[15] highlighted the importance of modern instructional materials in enhancing student interest and engagement, which is particularly pertinent in regions with limited resources. Secondly, while there is a growing emphasis on integrating technology into education globally, there is a lack of more comprehensive studies specifically focusing on Anambra State.

Moreover, understanding the current utilization and impact of modern instructional materials in Anambra State is essential for informed decision-making and policy formulation. Without such insights, educational stakeholders may miss opportunities to improve teaching practices and student learning outcomes. Detrich and Lewis (2013)[9] emphasized the importance of evidence-based interventions in education, underscoring the necessity of empirical research to guide educational reforms and initiatives.

Research Objectives

1. To identify the relevance of modern instructional materials in primary education classroom.
2. To find out some of the available modern instructional materials used in primary education classroom.
3. To determine the extent to which lecturers use modern instructional materials.

Research Questions

The following research questions guided the study;

1. What are the available modern instructional materials used in primary education classroom?
2. To what extent do lecturers use the modern instructional materials in the primary education classroom?
3. To what extent does the utilization of these modern instructional materials impact on students' learning?

2 Methods

The study employed a descriptive survey research design conducted in Anambra State, Nigeria, targeting lecturers in tertiary institutions teaching primary education, early childhood education, and related courses. Data collection utilized a questionnaire via Google Forms, featuring two sections: personal data and response guide. Before distribution, the questionnaire underwent validation by educational psychology experts and reliability testing via the test-retest method, yielding a high correlation coefficient of 0.88. The questionnaire link was shared via WhatsApp, Instagram, and other platforms, garnering 50 responses within four weeks. Data analysis involved calculating weighted mean scores and standard deviations, with an acceptance criterion set at a mean of 2.50. Items scoring 2.5 and above were accepted, while those below 2.4 were rejected, ensuring robustness in the research findings.

Additionally, the Google Survey process facilitated efficient data collection, organization, and analysis. After the survey closure, data were exported to an Excel spreadsheet for further analysis and then imported into SPSS software for statistical examination, enabling researchers to explore trends, relationships, and patterns in the data. This streamlined approach contributed to informed decision-making in research endeavors, enhancing the study's credibility and reliability. The use of a rigorous validation process and reliability testing ensured the quality and integrity of the research instrument, further bolstering the study's validity and trustworthiness. Overall, the study methodology adhered to best practices in research design and data collection, enhancing the study's rigor and contributing to the advancement of knowledge in the field of education.

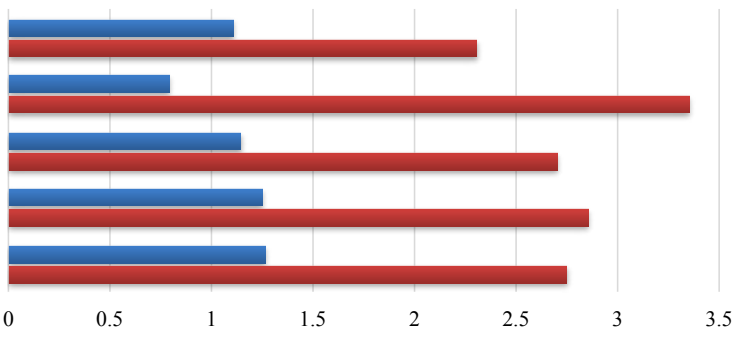
3 Results

Research Question 1: What are the available modern instructional materials used in primary education classroom?

Figure 1 showed the available modern instructional materials used in primary education classroom. The assessment indicates the perceived usefulness of various modern instructional materials in primary education classrooms. Maps and charts received the

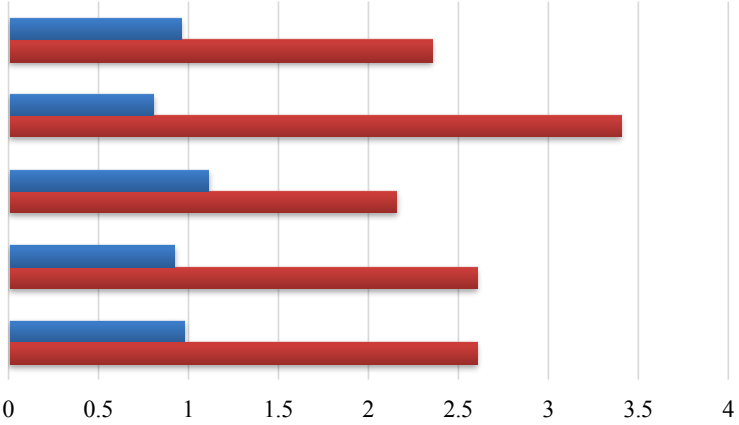
highest acceptance score with a mean of 3.35 (SD = 0.79), suggesting widespread agreement on their effectiveness. Projectors and digital boards, as well as audio and video recorders, were also well-received, with means of 2.85 (SD = 1.25) and 2.75 (SD = 1.26) respectively. Digital cameras and scanners garnered a moderate acceptance score of 2.70 (SD = 1.14). However, podcast and camcorder devices fell below the acceptance threshold, with a mean of 2.30 (SD = 1.1), indicating a lack of consensus on their utility in primary education classrooms.

Research Question 2: To what extent do lecturers use the modern instructional materials in the primary education classroom?



	Audio and Video recorders are modern instructional materials used in primary education classroom	Projectors and digital board are available modern instructional materials used in primary education classroom	Digital camera and scanner are available modern instructional materials used in primary education classroom	Maps and charts are available modern instructional materials used in primary education classroom	Podcast and camcorder devices are available modern instructional materials used in primary education classroom
Standard deviation	1.26	1.25	1.14	0.79	1.1
Mean	2.75	2.85	2.7	3.35	2.3

Figure 1: Mean and standard deviation on available modern instructional materials used in primary education classroom



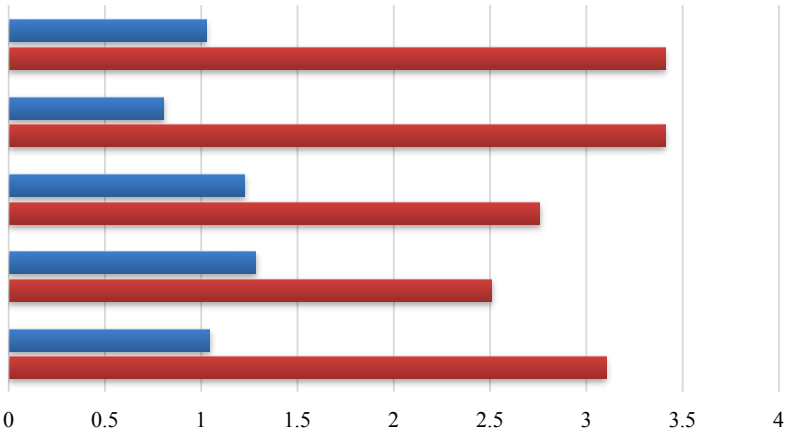
	Lecturers use audio and video recorders regularly in primary education classroom	Lecturers use projectors and digital board in primary education classroom	Lecturers use digital camera and scanner often in primary education classroom	Lecturers use maps and charts in primary education classroom	Lecturers use podcast and camcorder devices regularly in primary education classroom
Standard deviation	0.97	0.92	1.11	0.8	0.96
Mean	2.6	2.6	2.15	3.4	2.35

Figure 2: Mean and standard deviation on how lecturers use the modern instructional materials in the primary education classroom

Figure 2 showed the evaluation assesses the frequency of usage of various instructional materials by lecturers in primary education classrooms. Maps and charts received the highest acceptance score with a mean of 3.40 (SD = 0.8), indicating their regular use. Audio and video recorders, as well as projectors and digital boards, were also accepted, with means of 2.60 (SD = 0.97) and 2.60 (SD = 0.92) respectively, reflecting their regular utilization. However, digital cameras and scanners fell below the acceptance threshold, with a mean of 2.15 (SD = 1.11), suggesting infrequent usage. Similarly, podcast and camcorder devices were rejected, with a mean of 2.35 (SD = 0.96), indicating limited usage in classrooms

Research Question 3: To what extent does the utilization of modern instructional materials influence students' learning?

Figure 3 showed the assessment evaluates the perceived benefits of using modern instructional materials. Results indicate widespread acceptance of their effectiveness. Use of modern instructional materials is seen to promote easy understanding of difficult concepts (Mean = 3.10, SD = 1.04), improve student abilities and interests (Mean = 2.50, SD = 1.28), and enhance learning and assimilation (Mean = 2.75, SD = 1.22). Moreover, their use facilitates retention of facts (Mean = 3.40, SD = 0.8) and encourages experimentation and discovery (Mean = 3.40, SD = 1.02), underscoring their value in enriching the learning experience in computer science education.



	Use of modern instructional materials promotes easy understanding of difficult concepts in computer programming class	Regular use of modern instructional materials improve student's abilities, aptitudes and interest in human computer interaction subject	The use of audio-visual aids while teaching improves learning and assimilation of database systems	Educators use of modern instructional materials promotes students retention of facts about theory of computing	Use of modern instructional materials gives room for experimentation and discovery of new information in artificial intelligence
Standard deviation	1.04	1.28	1.22	0.8	1.02
Mean	3.1	2.5	2.75	3.4	3.4

Figure 3: Mean and standard deviation on how the utilization of modern instructional materials influence students' learning

4 Discussion of Findings

Research question 1 sought to find out the available modern instructional materials used in primary education classroom. Based on the findings, it was observed that in the realm of modern instructional materials used in primary education classrooms, a variety of tools have emerged to enhance teaching and learning experiences. Among these are audio and video recorders, projectors and digital boards, digital cameras and scanners, as well as maps and charts. Audio and video recorders serve as invaluable aids in capturing instructional content, allowing for later review and reinforcement of concepts. They provide a dynamic means of engaging students through mul-

timedia presentations and facilitating differentiated instruction (Wahyuni et al, 2024).[27] Similarly, projectors and digital boards offer interactive visual displays that cater to diverse learning styles, enabling teachers to illustrate complex concepts with clarity and interactivity (Al-Faki & Khamis, 2014).[2] On the other hand, digital cameras and scanners provide opportunities for hands-on learning and exploration, allowing students to document their observations and creations while fostering creativity and critical thinking skills (Olugbade, 2023).[22] Meanwhile, maps and charts serve as essential tools for spatial understanding and geographical literacy, offering visual representations of data and concepts that enhance comprehension and retention (Idiong et al, 2019).[14] In contrast, a study by Omosekejimi et al, (2018)[23] found that while digital technologies like projectors and digital boards are widely available in Nigerian primary education classrooms, their effective integration into pedagogical practices remains limited. This finding highlights the importance of ongoing professional development and support for educators to harness the full potential of modern instructional materials.

Research question 2 sought to find out how lecturers use the modern instructional materials in the primary education classroom. The results revealed that audio and video recorders are frequently employed by lecturers to enhance teaching and learning experiences. These tools enable instructors to record lessons, provide multimedia content, and facilitate interactive learning opportunities (Khamparia & Pandey, 2018).[17] Similarly, projectors and digital boards are commonly utilized by lecturers to deliver visual presentations, display multimedia content, and engage students in interactive learning activities (Krusche et al, 2020).[19] In contrast, the utilization of maps and charts by lecturers in primary education classrooms appears to be less prevalent. A study by Ogunwuyi (2022)[21] found that while maps and charts are available in classrooms, their integration into instructional practices by lecturers is limited. Lecturers tend to rely more heavily on traditional methods of instruction rather than incorporating these visual aids to enhance learning experiences. This finding is supported by a related study conducted by Ng'eno (2015),[20] which revealed that lecturers often face challenges in effectively integrating maps and charts into their teaching due to a lack of training and resources. Despite recognizing the potential benefits of these instructional materials, lecturers may struggle to incorporate them into their pedagogical approaches without adequate support and professional development opportunities.

Research question 3 dealt with utilization of these modern instructional materials influence students' learning. The utilization of modern instructional materials in classrooms significantly influences students' learning experiences and outcomes across various subjects. For instance, in computer programming classes, the use of modern instructional materials, such as interactive software and programming tools, promotes easy understanding of complex concepts (Guo, 2018).[11] This finding is supported by a related study conducted by Altin & Saracaloğlu, 2018),[4] which emphasized that the integration of modern instructional materials enhances students' comprehension and application of programming principles. In contrast, while discussing human-computer interaction subjects, regular use of modern instructional materials has been shown to improve students' abilities, aptitudes, and interest in the subject matter (Renzulli & Dai, 2014).[24] This finding aligns with the results of a study by Alenezi (2020),[1] which highlighted that exposure to interactive learning environments facilitated by modern instructional materials fosters student engagement and motivation in human-computer interaction courses. Similarly, the use of audio-visual aids during teaching sessions has been found to enhance the learning and assimilation of database systems among students (Bagila et al, 2019).[6] This result corroborates findings from previous research by Hung and Chen (2018),[13] which demonstrated that multimedia presentations and visual representations of database concepts contribute to improved comprehension and retention among learners. Moreover, educators' utilization of modern instructional materials promotes students' retention

of facts about the theory of computing (Al-Husaeni et al, 2024).[3] This outcome underscores the importance of incorporating visual aids, simulations, and interactive learning activities to reinforce theoretical concepts in computer science education.

5 Conclusion

In conclusion, this study sheds light on the crucial role of modern instructional materials in the teaching and learning of primary education in Anambra State, Nigeria. Through an exploration of the extent of utilization and the impact on students' learning experiences, several key findings have emerged. Firstly, it is evident that modern instructional materials such as audio and video recorders, projectors and digital boards, digital cameras and scanners, as well as maps and charts, are widely available in primary education classrooms. However, their effective integration into pedagogical practices varies among educators.

Secondly, while some lecturers demonstrate regular use of modern instructional materials, particularly audio and video recorders and projectors, there is a need for greater emphasis on the incorporation of visual aids like maps and charts. Lecturers play a pivotal role in creating engaging and interactive learning environments through the effective utilization of these materials. Moreover, the study highlights the positive influence of modern instructional materials on students' learning outcomes. From facilitating comprehension of difficult concepts to fostering interest and retention in various subjects, these materials contribute significantly to enhancing the quality of education in Anambra State.

Nevertheless, challenges such as inadequate training, resource constraints, and resistance to change among educators pose obstacles to the optimal utilization of modern instructional materials. Addressing these challenges requires concerted efforts from educational stakeholders, including policymakers, school administrators, and teacher training institutions. In conclusion, the findings underscore the importance of continued investment in modern instructional materials and professional development initiatives to support educators in Anambra State in harnessing the full potential of these tools.

References

[1] Alenezi, A. (2020). The role of e-learning materials in enhancing teaching and learning behaviors. *International Journal of Information and Education Technology*, *10*(1), 48-56.

[2] Al-Faki, I. M., & Khamis, A. H. A. (2014). Difficulties facing teachers in using interactive whiteboards in their classes. *American International Journal of Social Science*, *3*(2), 136-158.

[3] Al-Husaeni, D.F., Al-Husaeni, D.N., Nandiyanto, A.B.D., Rokhman, M., Chalim, S., Chano, J., Al Obaidi, A.S.M. and Roestamy, M., (2024). How technology can change educational research? definition, factors for improving quality of education and computational bibliometric analysis. *ASEAN Journal of Science and Engineering*, *4*(2), pp.127-166.

[4] Altin, M., & Saracaloğlu, A. S. (2018). Effect of reading comprehension instruction enriched with cultural materials on English learning. *Cogent Education*, *5*(1), 1475589.

[5] Artal-Sevil, J. S., Romero, E., & Artacho, J. M. (2018). Using new multimedia learning technologies: presentations design tools, dynamic animations, interactive maps, visual content and multimedia resources. In *EDULEARN18 Proceedings* (pp. 9617-9627). IATED.

[6] Bagila, S., Kok, A., Zhumabaeva, A., Suleimenova, Z., Riskulbekova, A., & Uaidullakyzy, E. (2019). Teaching primary school pupils through audio-visual means. *International Journal of Emerging Technologies in Learning (iJET)*, *14*(22), 122-140.

[7] Braun, K. L. (2019). Enhancing the general chemistry laboratory using integrated projects based on real-world questions. In *Active Learning in General Chemistry: Specific Interventions* (pp. 61-78). American Chemical Society.

[8] Chigbu, P. O., & Adamu, M. A. (2023). Instructional Materials and Curriculum Development in Nigerian Educational System: Challenges and Prospects. *International Journal of Formal*

Education, *2*(12), 392-406.

[9] Detrich, R., & Lewis, T. (2013). A decade of evidence-based education: Where are we and where do we need to go?. *Journal of Positive Behavior Interventions*, *15*(4), 214-220.

[10] Dunn, T. J., & Kennedy, M. (2019). Technology Enhanced Learning in higher education; motivations, engagement and academic achievement. *Computers & Education*, *137*, 104-113.

[11] Guo, P. J. (2018, April). Non-native english speakers learning computer programming: Barriers, desires, and design opportunities. In *Proceedings of the 2018 CHI conference on human factors in computing systems* (pp. 1-14).

[12] Hsia, L. H., Lin, Y. N., & Hwang, G. J. (2021). A creative problem solving-based flipped learning strategy for promoting students' performing creativity, skills and tendencies of creative thinking and collaboration. *British Journal of Educational Technology*, *52*(4), 1771-1787.

[13] Hung, I. C., & Chen, N. S. (2018). Embodied interactive video lectures for improving learning comprehension and retention. *Computers & Education*, *117*, 116-131.

[14] Idiong, E. A., Eyenaka, F. D., & John, D. E. (2019). Effects of Graphic Advance Organizers on Senior Secondary School Students' Performance and Retention of Physics Concepts. *GASPRO Intl Journal of Eminent Scholars*, *5*(3), 1-9.

[15] Ile, C. M., & Ikechukwu, S. N. (2020). Availability of Modern Instructional Materials for Teaching Business Subjects in Secondary Schools in Anambra State, Nigeria. *International Scholar Journal of Arts and Social Science Research*, *3*(1), 25-36.

[16] Issah, M. S., Alhassan, H., & Ibrahim, F. H. (2024). Developing the Skills and Techniques for the Production of Instructional Materials by Teacher Trainees at Gambaga College of Education. *Indonesian Journal of Education and Social Sciences*, *3*(1), 17-24.

[17] Khamparia, A., & Pandey, B. (2018). Impact of interactive multimedia in E-learning technologies: Role of multimedia in E-learning. In *Digital multimedia: concepts, methodologies, tools, and applications* (pp. 1087-1110). IGI Global.

[18] Kim, S., Choe, I., & Kaufman, J. C. (2019). The development and evaluation of the effect of creative problem-solving program on young children's creativity and character. *Thinking Skills and Creativity*, *33*, 100590.

[19] Krusche, S., von Frankenberg, N., Reimer, L. M., & Bruegge, B. (2020, June). An interactive learning method to engage students in modeling. In *Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering: Software Engineering Education and Training* (pp. 12-22).

[20] Ng'eno, J. K. (2015). *Challenges Facing Effective use of Geography Instructional Resources by Teachers in Public Secondary Schools, Bureti Sub-County, Kericho County-Kenya* (Doctoral dissertation, Kenyatta University).

[21] Ogunwuyi, B. O. (2022). A survey of media resources utilization by lecturers in colleges of education, south-west Nigeria. *Ghana Library Journal*, *27*(1), 12-22.

[22] Olugbade, D. (2023). Exploring the Impact of Learning Technologies in Teaching Interaction Design: A Case Study at First Technical University, Nigeria. *Journal of Education and Practice*, *14*(21), 43-55.

[23] Omosekejimi, A. F., Brume-Ezewu, S., Brume-Ezewu, E. G., Nwobu, B. K., & Nweke, A. C. (2018). ICT and digital literacy skills: A mechanism for efficient teaching in Nigerian colleges of education. *Information Impact: Journal of Information and Knowledge Management*, *9*(3), 57-71.

[24] Renzulli, J. S., & Dai, D. Y. (2014). Abilities, interests, and styles as aptitudes for learning: A person-situation interaction perspective. In *Perspectives on thinking, learning, and cognitive styles* (pp. 23-46). Routledge.

[25] Smeda, N., Dakich, E., & Sharda, N. (2014). The effectiveness of digital storytelling in the

classrooms: a comprehensive study. *Smart Learning Environments*, *1*, 1-21.

[26] Tang, T., Vezzani, V., & Eriksson, V. (2020). Developing critical thinking, collective creativity skills and problem solving through playful design jams. *Thinking Skills and Creativity*, *37*, 100696.

[27] Wahyuni, S., Khoiri, N., & Novita, M. (2024). Development of an ESD-oriented Energy Teaching Module with A Differentiated Learning Approach. *KnE Social Sciences*, 262-280.

BILINGUAL PUBLISHING GROUP

Journal of International Education and Practice
https://ojs.bilpubgroup.com/index.php/jiep

ARTICLE

A Tentative Study on THIEVES Reading Method in Comprehensive English Reading Course from the Perspective of OBE - Taking Text A Virtue Called Devotion as an Example

CHENG Hong-bo*

School of Foreign Studies, Zhaoqing University, Zhaoqing 526061, China

ABSTRACT

The outcome-based education or OBE educational philosophy aims to achieve results and puts students first. It is an educational philosophy that adopts a reverse thinking approach to the curriculum system. The THIEVES reading method breaks the traditional thinking of English reading, and students shift from passive knowledge acquisition to active knowledge acquisition. By "stealing" relevant knowledge from the text in advance, students build a solid groundwork in preparations for formal text reading. Through literature review and teaching practice, this study takes Reading I text titled A Virtue Called Devotion in Unit 6 of the comprehensive English course as an example, and explores the feasibility of the THIEVES reading method in comprehensive English reading classes from the perspective of OBE.

Keywords: OBE; THIEVES reading method; Comprehensive English

1 Introduction

Reading is an important way for human beings to acquire knowledge, enhance intelligence, and cultivate morality. It can inspire people's thoughts, establish lofty ideals, and cultivate magnanimity. Reading is not only an important way to acquire knowledge, improve literacy, and cultivate character, but also plays a positive and important role in inheriting national spirit and spreading national culture. In the process of learning the English language, English reading is a compulsory subject and an indispensable part of listening, speaking, reading, writing, and translation. Reading texts can help reproduce and consolidate acquired vocabulary and grammar knowledge, enhance English reading comprehension ability, and expand cross-cultural knowledge reserves; reading English can help to acquire knowledge, absorb excellent achievements of Chinese and foreign civilizations, and cultivate the ability

*CORRESPONDING AUTHOR:
CHENG Hong-bo, Lecturer, School of Foreign Studies, Zhaoqing University, Zhaoqing 526061, China; Email: 291827459@qq.com

ARTICLE INFO
Received: 26 September 2024 | Accepted: 16 October 2024 | Published: 28 November 2024
DOI: https://doi.org/10.30564/jiep.v7i2.5566

of cross-cultural comparison and critical dialectical thinking between regions and countries; reading can help establish correct socialist values, enrich and improve one's personality, and become a well-rounded person that society needs. Unfortunately, in practical teaching, many students' motivation for learning English is not "pure". Some are to cope with examinations, and some are to "talk" with foreigners. Scholars (Shi Yongzhen, 2000[9], Wang Yong, 2012[14], and Yuan Jing, 2017[16]) have found in a survey of English learning motivation among non-English major college students that their learning of English tends to be purposeful and instrumental, with finding a good job and passing entrance exams being their main goals. In this context, how can teachers, as the leading guides of teaching activities, help students carry out efficient English reading activities and enhance their interest in learning English? What English reading strategies should students adopt to achieve twice the result with half the effort?

2 OBE-Oriented Teaching Philosophy

Outcome-Based Education or OBE for short is an educational philosophy that drives the educational process through learning outcomes, with outcomes as the goal and students as the foundation. It is an educational philosophy that adopts a reverse thinking approach to the curriculum system. The OBE educational concept was first proposed by Spady et al.(1994)[10] in 1981 and quickly developed into a mainstream educational concept in countries such as the United States, the United Kingdom, and Canada. It has since become popular worldwide. OBE emphasizes that the allocation of educational resources and all teaching activities (including teaching design, teaching steps, and teaching reflection) should be closely centered around students' expected learning outcomes and ability development. The implementation of OBE teaching philosophy requires the subjective initiative of students and the leading role of teachers.

According to the talent cultivation plan for English majors at Zhaoqing University[1], the main teaching tasks of English majors are for students to master solid English subject knowledge, familiarize themselves with Chinese and foreign cultural knowledge, possess good English application ability, strong English teaching ability, and certain teaching and research ability, as well as cross-cultural ability, self-learning ability, critical thinking ability, and innovative consciousness. This is highly consistent with the OBE concept in terms of educational goals and implementation paths. College Comprehensive English courses should take the guidance of OBE concept as an opportunity to fully stimulate students' reading interest and improve their reading ability through the use of correct reading strategies. By reading, one can unconsciously absorb the good words and sentences in the article, become familiar with different literary styles, rhetorical devices, and logical frameworks. This is of great benefit to writing. Reading and listening belong to input processes, while speaking and writing belong to output processes. Once the input process of 'reading' is completed, the output will 'come naturally'. The improvement of students' comprehensive abilities in listening, speaking, reading, and writing in English, in turn, provides them with a sense of satisfaction and achievement. This sense of satisfaction will also enhance students' confidence, and the establishment of confidence will motivate and inspire more reading activities, forming a positive interaction cycle.

3 THIEVES Reading Method

Based on the above background, the writer of this paper proposes to implement the THIEVES reading method strategy in the design of comprehensive English curriculum teaching. The THIEVES reading method is first proposed by Manz(2002)[6]. As the name suggests, it refers to stealing information from text messages in advance like a "thief". THIEVES is an acronym composed of the first letters of different words. T represents title, H represents heading, I represents introduction, E represents every first sentence in a paragraph, V represents visuals and vocabulary, E represents end of chapter questions, and S represents summary. THIEVES is an activation strategy

1 https://wyxy.zqu.edu.cn/info/1084/4449.htm

that helps students activate their previous knowledge (Kibui, 2017[5]). Imagine what you would do if you took something that doesn't belong to you.If readers can obtain relevant information about an article in advance, in a sense, readers are ahead of the author of the article. It is possible to predict some of the author's central ideas, and then compare these predictions with the ideas we already know to grasp the content. The application of Thieves reading method can help students create a T-H-I-E-V-E-S "mental map", thereby enhancing their understanding and memory of the information and ideas encountered during formal reading. Most students open books and start reading when doing reading activities. This approach is very mechanical and passive. They do not know the theme of the article, nor are they clear about the connections and logical structure between paragraphs. Complaints are often heard from English learners that even after reading a paragraph, they still don't understand its meaning for some reason. This type of reading is a "lead by the nose" learning method, a passive process of obtaining information, and there is no effective link and connection established between the reader and the text. If the content of the reading material is far from the reader's personal knowledge background or experience, coupled with the reader's lack of endurance and perseverance, it is easy for them to find the reading material boring and give up halfway, terminate the reading, and lead to the failure of the reading activity. There is a saying in the translation circle that goes, "A professional translator should not do unprepared translation". Before translating, professional translators will definitely have a thorough understanding and speculation of the content that the spokesperson may express, the words and phrases that may be used, the language background, and even the tone of the speech. Do not engage in unprepared battles. This viewpoint is validated in an interview with the renowned translator Zhang Lu. According to Zhang (2012)[13], Chinese former Premier Wen Jiabao likes to quote poems from ancient poets of Liu Yuxi, Wang Anshi, and Qu Yuan the most. Therefore, when translating for Premier Wen, it is important to consider the context in which he is speaking and understand what kind of spirit he is trying to convey by quoting ancient poems at this moment. This is a reading strategy that can give you a comprehensive understanding of this chapter before starting to read. It is essentially about helping your brain better remember and understand the importance and relevance of the information in your course. The preparation work before the THIEVES reading method and translation activity can be said to lead to the same goal.

4 Literature Review

Foreign scholars tend to focus on quantitative research on THIEVES. Endang (2023)[4] has confirmed through a one group pre-test post test design and analysis of sample data that the implementation of THIEVES strategy has a strong impact on teaching reading comprehension of descriptive texts. Elnaz (2019)[3] has adoped a mixed method design to study 63 Iranian participants who speak English as a foreign language. The study has found that prior knowledge has a significant positive impact on reading comprehension; more interesting sentences are easier for readers to remember than less interesting sentences. The research results of Asmarini et al. (2022)[15] indicate that THIEVES strategies can help students understand the content they are reading, especially narrative and report texts. The positive results of using THIEVS emphasize its value as an influential tool that can promote students' active participation and improve their reading comprehension abilities.

The writer of the paper has utilized the search engine on the China National Knowledge Infrastructure (CNKI) platform to search for the topic of "THIEVES Reading". So far, only 4 academic articles have been retrieved, most of which are qualitative research. The small quantity is astonishing. The earliest article published from CNKI can be traced to 2005 when Tang Xiangtao and Li Zuxiang (2005)[11] have contributed their ideas to the topic of "THIEVES Reading" by the name of *English Reading Strategies and Applicaiton Techniques by"THIEVES"* . They suggest that the THIEVES English reading method

is actually "summarizing and simplifying various effective English reading techniques into an easy to master and understand strategy. This strategy is not only applicable to reading short English texts, but also to other genres. The second THIEVES-related work is a detailed study on the application of THIEVES strategies to English reading practice by Tang (2006)[12] in ensuing year 2006. Another two articles have come into public view in recent years. Ding Haiying (2021)[1] has explored various issues in reading science popularization texts in English in primary school from the perspective of practical teaching. It is believed that teachers can flexibly use the "THIEVES" reading strategy according to actual teaching needs, adjust the structure and order of "THIEVES", make reading tasks more coherent and logical, and make reading more effective. Ru Yufeng (2023)[8] has employed the THIEVES reading method adjusted by Ding Haiying to test the effectiveness of the teaching design, taking the teaching of the text "Only One Earth" as an example. Although the THIEVES method has many advantages and is more suitable for popular science explanatory texts, it still needs further verification for other genres of articles. After "thief reading" in both the topic and keyword search engine boxes have been typed in, and the result shows "no data available". Likely it is because the English word "thieves"is translated as " 贼（zei）"?! The term "zei" in Mandarin Chinese is not a word with a positive connotation, and according to the principle of "seeking benefits and avoiding harm", there seems to be some reason for the limited research on the THIEVES reading method. Interestingly, after entering "THIEVES reading method" into Baidu's search engine box, most of the pop-up content is similar to the brief introduction of this reading method and the curriculum design of THIEVES reading method on "Zhihu-an equivalent of Chinese Quora", "Personal Library" and "WeChat official account".

5 Exploration of THIEVES Reading Method Practice

Through literature review and daily teaching practice, it can be hypothesized that teachers can make flexible adjustments to certain content of THIEVES. If I in the word THIEVES can refer to introduction, it can also represent information, that is, all the relevant information that the student "stole". The first E can represent every first sentence in a paragraph, as not all topic sentences are placed at the beginning of the paragraph. It is possible that the topic sentence is placed at the end of the sentence or in the middle. Therefore, E can represent every topic sentence in a paragraph. If so, students will not be confined to the first sentence of each paragraph when using the THIEVES reading strategy.

Manz (2002)[6] believes that through title reading, students must find information about the relevant topic, the relationship between the topic and the chapter, the viewpoint and textual information that the title should present. Taking a text *A Virtue Called Devotion* out of *A New English Course2* (Mei Deming (2022))[7](student's book) as an example, students need to obtain the following information: the topic of this text is Virtue Devotion; Visually seeing the word "devotion" can activate the conceptual and categorical schemas previously associated with it. A series of questions might be raised. Does "devotion" signify "loyalty" or "dedication?" Is it devotion to a romantic relationship, a family relationship, a career, a nation, or even a religion? Students can identify their differences by consulting materials. You can also activate the situational schema and recall whether you have studied articles with similar topics. After understanding the general idea of the topic, think about a question - "What content may I read?". Readers can further speculate whether the content of the article is intended to help them interpret the meaning of "devotion" or to provide an example to tell a story to help readers understand the true meaning of a specific devotion category; In terms of genre, predictions can be made as to whether it is expository writing, narrative writing, or argumentative writing.

The second step is heading. In this step, readers need to pay attention to how many parts the author plans to divide this topic into and what are the subheadings of each section.Based on these subheadings,

guess what content each section will contain. If a text does not have subheadings, students can construct a schema. Students can conduct this activity based on the post-reading questions, with each question corresponding to a reference answer, and each answer being a subheading. Taking the example of text *A Virtuous Called Devotion*, the first post-reading question is "In what physical condition is the writer's grandmother?" It can be inferred that the answer to this question is related to physical condition. This answer can be assumed as a subtitle: Physical Condition of Grandmother. Due to the second question being "Why can the writer's family hard put up with Grandma?", it can be inferred that the second subheading revolves around "causal relationships" - reasons why family members cannot tolerate their grandmother. We can tentatively assume a title: Reason. Following this line of thought, and so on, we can derive the third title, fourth title, and so on. This approach breaks the passive teaching tradition of reading articles first and then finding answers. By virtue of questions, students can activate the program schema, purposefully read the text, and find answers to solve the problem. Through this programmatic operation, students can efficiently complete reading tasks.

The third step is information or introduction. In this step, students must identify the following information: whether the first paragraph provides an overview of the content or main idea of the article, and whether the reader is familiar with the topic. What do readers already know about this topic? The first paragraph of Text *A Virtue Called Devotion* introduces the grandmother's age and physical condition with significant hearing loss. By using two parallel and parallel subordinate compound sentences, the changes in the grandmother's thoughts and mentality after aging are highlighted, and the reader's impression of the characteristics of grandmother's aging is deepened: excessive or even harsh demands and pessimism. The Introduction section will benefit students in two aspects. From a vocabulary perspective, the first introduction can help enrich one's vocabulary. Of course, this involves the use of language learning strategies, which are particularly important for foreign language learners. Specifically, the article mentions that my grandmother's age is ninety-four. If a student is a learner with a strong awareness of expanding their vocabulary, when they see the word ninety-four, the reader's visual schema will immediately be activated. Reading comprehension is a process of interaction between various levels of schemas(Dong & Jiang 2021).[2] After the visual feature schema is activated, it will automatically activate language schemas such as words, semantics, grammar, and strategic schemas for vocabulary memory. Strategic schemas are psychological structures related to achieving specific goals or outcomes, including cognitive patterns for selecting and implementing behavioral strategies, which influence our decision-making and behavioral choices. Under the guidance of strategic schemas, students will consciously search for age-related vocabulary. Ninety-four is a vocabulary selected by students, and the implemented strategy can be associative strategy. Students can associate different professional terms for different age groups in Chinese. That is to say, 60 years old is called the age of 花甲（hua jia）, and 70 years old the age of 古稀（gu xi）, 80 years old the age of 耄耋（mao die）, 90 years old the age of 鲐背（tai bei）, and 100 years old the age of 期颐（qi yi）. Furthermore, the corresponding English words are found to be sexagenarian, septuagenarian, octogenarian, nonagenarian, and centenarian respectively. Many vocabulary words are acquired by students through pre-class and post-class summarization and knowledge expansion. Relying solely on the vocabulary learned in the classroom text is far from meeting the requirements of exams and the goals of core English literacy. By activating strategic schemas and utilizing associative and imaginative strategies, students can doubtless achieve twice the result with half the effort.Secondly, this strategy is also applicable to the learning and consolidation of grammar knowledge points. The last two sentences of this paragraph are about the grammar knowledge points of result adverbial clauses. During the THIEVES stage, students can search for other categories of adverbial clauses in advance, such as adverbial clauses of

time, adverbial clauses of place, adverbial clauses of reason and cause, adverbial clauses of comparison, adverbial clauses of manner, adverbial clauses of concession, adverbial clauses of result, and adverbial clauses of purpose, etc. In fact, memorizing and mastering clauses is indeed one of the compulsory contents for English majors in the lower grades.Finally, while acquiring vocabulary and grammar, we further speculate on the content as follows: Grandmother is already an elderly person in her prime. Because the author of the text is a Westerner and the readers are Chinese, students will infer two different contexts: Chinese and Western. Because the Chinese context is relatively familiar, students may naturally speculate whether the following text will further discuss the traditional virtues of respecting and loving the elderly. The Western context is relatively unfamiliar, but students can still boldly guess a different text result based on their language foundation and knowledge accumulation.

The fourth step is to include every topic sentence in a paragraph. Students use reading skills to identify the central sentence of each paragraph and infer what the paragraph is going to say. Based on experience, topic sentences are usually placed at the beginning of each paragraph or at the end . However, if the rules are too absolute and the specificity is ignored, it can lead to overgeneralization errors. Some topic sentences appear explicitly or implicitly in the sentence, requiring students to summarize and refine them. For example, the first sentences of the fourth and fifth paragraphs are the central sentences of their respective paragraphs, which are "Grandma would not end up in a nursing home." and "In many lands, the elderly are treated respectfully as the head of the household." The last part is a story told by the mother, with the aim of conveying the importance of filial piety (孝顺) through words and deeds. And this gist does not appear directly at the beginning of the paragraph or as a summary at the end, but requires readers to summarize and generalize by themselves.

The fifth step is visual and vocabulary. Readers need to answer the following questions in order to become prepared during formal reading: Does this chapter include photos, illustrations, maps, charts, or graphics? What can be learned from the visual effects of a chapter? What is the most important visual effect in this chapter. Is there a list of key terms and definitions? Are there any important words in bold, italic, or underlined throughout the entire chapter? How much do I know about these special fonts? Can I distinguish the meanings of bold, italicized, or underlined sentences? The first six paragraphs of the text all contain content marked in blue font. There are ten words marked with superscripts in the upper right corner from the first to the sixth paragraphs, and some words (such as "her" and "my" in the fourth paragraph) are written in italics. These words and sentences with obvious special processing methods are the key and difficult knowledge points that need to be paid attention to when interpreting the text. The phrases "put up with"and "live with"in blue font in the first paragraph are a pair of synonyms; The words like "roomy" in the second paragraph, "discarded" in the third paragraph, and "heartless" in the fifth paragraph are all new vocabulary that needs mastering; Inexpensive and unappealing are knowledge points regarding negative prefixes "in-" and "un-"; The sentence structure in the blue font in the fourth paragraph is symmetrical, consisting of a subject predicate adverbial (SVA) structure. The symmetry of the structure can better serve as a contrast in semantics. Faced with the fact that "my" grandmother needs to be taken care of in her old age, other family members are deliberately avoiding the obligation to support the elderly, while my mother is different and actively proposes to take on the responsibility of supporting my grandmother.

The sixth step is End-of-chapter questions. Through learning the end-of-chapter questions, students can tell which information is important. If you can keep the questions in mind, you can annotate them in the text accordingly. Eight questions are raised after the text. All eight questions revolve around what, why, and how. What refers to the physical and mental condition of the grandmother and issues with the nursing home (questions 1, 3, and 4), the decisions made by the mother (question 5), and

the author's views on caring for the elderly (question 7) (question 8 is an open-ended question). Why refers to the reason why family members cannot tolerate their grandmother (question 2). How refers to how different societies treat the elderly differently (Question 6). What, why, and how can be connected together to form the framework structure of the entire problem. If these eight problems are solved, then this article will be easily comprehended.

Step 7 is Summarize thinking. That is to identify the central idea of the author in the article. In some literary genres, the last paragraph often summarizes the main idea of the article, but this approach is not universal. Students need to analyze specific problems on a case-by-case basis.

Students before implementation have been informed of the THIEVES reading strategy and practice procedure. This method has been applied to actual teaching practice in class once. Based upon the after-class discussion and conversation on THIEVES reading strategy, students find it interesting and instructive to their English reading comprehension. Their feedback mainly includes the following 3 points: first, knowledge scope and breadth have been widened and intensified, since students need to consult relevant materials corresponding with the topic. The process of searching for information involves knowledge enriching and vision widening; second, students are prepared with a goal as far as to generally(from a macro perspective) and particularly(from a micro perspective) grasp the main idea and minute details of each paragraph, vocabulary and syntax and semantics included; third, students keep questions attached to the text in mind as as to master the structure of the text and hopefully get to know some genres of various kinds of articles.

6 Summary

The THIEVES reading method has played an important role in fully mobilizing students' initiative in reading, reflecting the concept of "teacher as a guide and students as body", and changing the traditional teaching situation of "teachers proactively teach, but students passively learn". The learning objectives are more clear, and the learning strategies are more targeted. The THIEVES reading method is a specific application of the OBE concept, which is a set of learning plans tailored to students' needs. Through the implementation of the THIEVES reading method, students have a basic grasp of the framework, main idea, and key and difficult knowledge points of the article, and are prepared for formal reading. At present, Thieves' reading method is mainly applied in elementary and secondary education stages such as primary school, junior high school, and high school, and is rarely mentioned in English teaching in universities. This article takes the text A Virtue Called Devotion as an example, combined with the author's teaching practice, to explore the feasibility of Thieves reading method in college comprehensive English classes from the perspective of OBE. Although the THIEVES reading method has its unique advantages, there are still many limitations in practice. Firstly, whether THIEVES is applicable to any other genre of articles has not been verified yet; Secondly, a large amount of qualitative and quantitative research is needed to provide theoretical and experimental support to test the feasibility of the THIEVES reading method in colleges and universities.

References

[1] Ding Haiying. (2021). Exploration of the application of "THIEVES" reading method in reading popular science texts in primary school English - taking the teaching of "Smart Winter Animals" in 21st Century English Newspaper as an example. *Research on Classroom Teaching in Primary and Secondary Schools, 9*,42-50.

[2] Dong Chengguang &Jiang Ling. (2021).The essence analysis of foreign language teaching from the perspective of schema theory. *Modern Communication, 5*, 182.

[3] Elnaz Khataee. (2019). The effect of THIEVES strategy on EFL learners' reading comprehension. *International Journal of Instruction, 12*(2),677.

[4] Endang Susilawati. (2023).The implementation of THIEVES strategy in teaching reading com-

prehension of descriptive text. *Ethical Lingua, 10*(2),444-452.

[5] Kibui, A. W. (2017). Pedagogical implication of schemata in reading comprehension in the English language. *International Journal of Research in Humanities, Arts and Literature, 5*(4), 89–94.

[6] MANZ S.L. (2002). A strategy for previewing textbooks: teaching readers to become THIEVES. *The Reading Teacher, 55*(5),434.

[7] Mei Deming. (2022). New English course. *Shanghai Foreign Language Education Press, 1*, 73-74.

[8] Ru Yufeng. (2023).Teaching design of THIEVES reading method in Chinese reading teaching for senior primary school students - taking the teaching of the text "Only One Earth" as an example. *New Curriculum Research*, 262-264.

[9] Shi Yongzhen. (2000).A survey report on college students' motivation for English learning. *Foreign Language Learning Theory and Practice, 4*,8-11.

[10] SPADY W G.Outcome-Based Education: Critical Issues and Answers[M].Alexandria: American Association of School administration,1994: 1-9.

[11] Tang Xiangtao & Li Zuxiang. (2005). THIEVES English reading strategies and their application techniques. *Basic Education Research, 9*,27-28.

[12] Tang Xiangtao. (2006).Application of THIEVES strategies to students' English reading practice . *Hunan Education , 4*,36-37.

[13] Translator Zhang Lu's High School English Score Was not Outstanding.(2012). *Peninsula Morning News.* 32.

[14] Wang Yong. (2012) An empirical study on English learning motivation of non-English major students: a case study of China's polytechnic university. *Education Review, 5*,108-110.

[15] Yenny Asmarni , Wisma Yunita & Dedi Sofyan. (2022).Improving EFL ninth graders' reading comprehension through thieves learning strategy. *Journal of Applied Linguistics and Literature,7*(1),232-246.

[16] Yuan Jing. (2017).A study of structural model and differences of English learning motivations of non-English majors. *Journal of Chengdu Normal University, 33*(08),39-46.

BILINGUAL PUBLISHING GROUP

Journal of International Education and Practice
https://ojs.bilpubgroup.com/index.php/jiep

ARTICLE

Investigation on Challenges to Implementing Chemistry Experiments in Real Laboratories at Selected Universities in Southern Ethiopia

***Hiwot Bazie Bewota*[1*], *Bekele Lemma*[1], *Anteneh Wasyhun*[2], *Ashebir Bezabih*[2]**

[1] *Department of Chemistry, College of Natural and Computational Sciences, Hawassa University, Sidama region, Ethiopia*

[2] *Department of Educational Leadership and Management, Collage of Education, Hawassa University, Sidama region, Ethiopia*

ABSTRACT

Effective execution of chemistry experiments in real laboratories is essential for bridging the gap between theoretical knowledge and practical skills. However, numerous difficulties often hinder the successful implementation of these experiments. The study aimed to explore the challenges in conducting chemistry experiments in real laboratories at selected universities in southern Ethiopia, employing a descriptive survey research design. The study encompassed 63 chemistry instructors and 143 students (from 2nd to 4th years). Data were collected through closed-ended questionnaires and interviews and analyzed using descriptive statistics and thematic coding. Both instructors and students with moderate and above agreement levels identified several challenges in implementing experiments in real laboratories, which included the lack of chemicals, equipment, and safety materials. Other challenges to implementing laborator experiments were handling of expired chemicals, properly handling chemicals, poor university planning for resources, insufficient stakeholder attention, inadequate credit hours, difficulty in identifying supplies, and using instruments. These factors collectively obstruct the successful execution of chemistry experiments and highlighted the urgent need for improvements in resources, planning, and training to significantly enhance the quality of practical chemistry education.

Keywords: Practical skill; Chemistry instructors; Real laboratories; Implementation; Practical chemistry

*CORRESPONDING AUTHOR:
Hiwot Bazie Bewota, Department of Chemistry, College of Natural and Computational Sciences, Hawassa University, Sidama region, Ethiopia; Email: baziebe@gmail.com.

ARTICLE INFO
Received: 10 August 2024 | Accepted: 12 December 2024 | Pulbished: 26 December 2024
DOI: https://doi.org/10.30564/jiep.v7i2.5559

1. Introduction

1.1. Background

Laboratory activities are a fundamental aspect of science education at all levels, offering students enriched experiences in the subject. These hands-on experiments are essential tools for enhancing learning, fostering scientific reasoning, and increasing interest in science. Consequently, they occupy a central and unique role in the curriculum. Since the 19th century, educators acknowledged the indispensable value of laboratory instruction as it enables students to explore and comprehend the complexities of the natural world, and to bridging the gap between theoretical knowledge and practical application (Najami et al., 2020;[27] Shahzadi et al., 2023). [34]

The successful execution of laboratory experiments heavily depends on the availability and adequacy of resources, including up-to-date equipment, sufficient space, a variety of chemicals and reagents, and regular maintenance of these resources. These resources are vital for science education as they enable the hands-on application of theoretical concepts, thus improving students' understanding and involvement in the subject. (Abidoye et al., 2022;[3] Pareek, n.d.).[31]

However, many higher education's face significant challenges in meeting aforementioned optimal conditions. Zelalem (2023)[39] highlights that in the context of Ethiopian higher education; the shortage of laboratory equipment poses a substantial challenge to the effectiveness of science learning, and can hinder the ability to perform key experiments. This affects students' ability to grasp complex scientific principles and develop essential laboratory skills. Cavinto (2017)[10] stated that difficulties in identifying materials and supplies, along with limited access to instrumentation in university, significantly hinder effective practical instruction in the laboratory, and then impacting the overall quality of hands-on science education. Ligani et al. (2016)[22] identified several obstacles to learning in chemistry laboratories at Bule Hora University in Ethiopia. These include insufficient laboratory equipment and chemicals, lack of interest, concerns about chemical toxicity, and a lack of confidence. These challenges result in diminished confidence and restricted practical knowledge among students.

While research on the challenges of laboratory-based science learning has primarily focused on high schools, and specific concept in universities in Ethiopia, there is a common misconception that university science laboratories, including those for chemistry, are well-equipped with necessary materials. In reality, several experiments in universities are skipped without practical implementation for unspecified reasons. This leads to ambiguity to understanding the theoretical concepts. The underlying causes of these issues have not been properly identified and supported by research, leaving a significant gap in our understanding of how to improve laboratory-based science education in higher institutions. This study aimed to investigate the challenges hindering the implementation of chemistry experiments in real laboratories at selected Universities in Southern Ethiopia.

1.2. Research Question

To explore the challenges impeding the implementation of chemistry experiments in actual laboratory, the following research question was formulated:

1. What are the challenges to implement experiments in chemistry laboratory in selected universities in Southern Ethiopia?

1.3 Objective of the Study

The general objective of this research was to examine the difficulties that hinder the implementation of laboratory experiments in chemistry laboratory at selected universities in South Ethiopia. The specific objective was to:

1. Identify the challenges to implement experiments in chemistry laboratory at selected universities in Southern Ethiopia.

1.4 Significance of the Study

The significance of this study is in identifying the

obstacles that impede the effective implementation of chemistry experiments in real laboratories in Ethiopia. By pinpointing the main factors that obstruct laboratory-based education, the study aims to provide valuable insights for university administrators, educators, and policymakers. These insights can inform strategies to enhance laboratory facilities, improve resource allocation, and ensure that students receive a comprehensive and practical chemistry education. Moreover, the study contributes to the broader field of science education by highlighting the specific barriers faced in the context of Southern Ethiopian universities, which may differ from challenges encountered in other regions. Understanding these unique obstacles can help develop tailored interventions that are culturally and contextually relevant, thereby improving educational outcomes for students in these institutions. Additionally, the findings from this study can serve as a foundation for further research and collaboration among educational institutions, government agencies, and non-governmental organizations. By fostering a better understanding of the systemic issues affecting laboratory-based learning, the study aimed to promote a more effective and sustainable approach to science education, ultimately leading to the development of a skilled and competent workforce in the field of chemistry.

2. Literature Review

2.1. Importance of Laboratory Activities in Chemistry Education

Chemistry laboratory provide students with hand-on experience, allowing them to apply theoretical knowledge to practical situations. By conducting experiments, students gain a deeper understanding of chemical concepts and principles (Agustain and seery, 2017).[5] During the lab work, students encounter real-world challenges, such as troubleshooting experiments, interpreting results, and adjusting procedures. These experience foster critical thinking and problem solving skills, which are essential for scientific inquiry. By Linking chemistry experiments to industrial processes helps students see the relevance of what they learn in class. They understand how chemical reactions impact everyday life, from manufacturing to environmental sustainability (Elliot et al., 2008 [14] & Kuchkarov, 2022).[20] Chemistry labs teach students safety protocols, risk assessment, and proper handling of chemicals. These skills are crucial not only for scientific work but also for responsible citizenship. Laboratory activities allow students and teachers to analyzing data, drawing conclusions, and evaluating experimental outcomes. These skills enhance analytical abilities, and extend beyond chemistry and benefit students in various fields. Engaging in practical work within chemistry education not only stimulates and sustains interest, but also cultivates positive attitudes, satisfaction, open-mindedness, and curiosity. Furthermore, it serves to foster scientific thinking and encourages the application of the scientific method. (Hofstein & Hugerat, 2021).[18] According to Fonjungo et al., (2013) [15] research findings, comprehensive hands-on training and exposure to well-equipped laboratories contribute to developing skilled, confident and competent laboratory technologists by the time of graduation.

2.2. Laboratory Activities in University Chemistry Education

The chemistry curriculum at the university level often includes numerous abstract concepts and complex representations. Laboratory work is an effective means to address the abstraction of chemistry by allowing students to formulate hypotheses based on their understanding, confront unfamiliar problems, reinforce theoretical concepts, develop scientific skills, design experiments, analyze data, communicate experimental details, and retain key ideas from experiments over time. According to Reid and Shah, (2007),[32] practical work in undergraduate chemistry courses is essential for allowing students to handle equipment and chemicals, learn safety protocols, master techniques, and measure accurately, and observe carefully. More importantly, it makes chemistry tangible and facilitates empirical testing, which is crucial for a deeper understanding of the subject.

Skills such as observation, deduction, and interpretation are vital, as they underscore the significance of empirical evidence in scientific inquiry. Additionally, acquiring other practical skills, including teamwork, report writing, presenting, discussing, time management, and problem-solving, is equally important for a well-rounded science education. Agustian et al., (2022) [6] research findings revealed that university students develop five clusters of laboratory-related competencies when learning chemistry experiments. These clusters include experimental skills, disciplinary knowledge, higher-order thinking and epistemic skills, transversal competencies, and competencies related to the affective domain. Research studies emphasized the critical role of pre-preparation in ensuring adequate university students preparation for laboratory work. Preparedness is essential for students to gain meaningful conceptual insights and benefits from their practical experiences, enabling them to better grasp the theoretical aspects of their coursework. Without adequate preparation, students may struggle to connect practical activities with underlying scientific concepts (Rollnick et al., 2010).[33]

2.3. Impact of Laboratory Resource Limitations on Educational Quality

The impact of laboratory resource limitations on educational quality, particularly in the context of practical chemistry courses, can significant, this leads to students not engage in hands-on experiments, which are crucial for developing practical skills and understanding scientific concepts. Furthermore Schools and universities with limited resources often cannot provide the same quality of education as well-funded institutions, leading to disparities in student outcomes. For instance, Ndihokubwayo (2017)[28] found that teachers face challenges such as limited time, scarce of materials, and a lack of improvisation skills in their daily science teaching. These barriers hinder the effectiveness of science education, potentially lowering student engagement and achievement. According to a study by Johnson (2023),[19] inadequate laboratory resources lead to fewer opportunities for students to participate in meaningful practical work, thereby affecting their overall academic performance and preparedness for professional careers. Dahar and Faize (2011) [13] found that inadequate science laboratory resources result in lower academic achievement. According to Malika et al., (2020),[24] obstacles in laboratory activities such as insufficient laboratory space, inadequate and non-standardized equipment, limited availability of instructional manuals, and insufficient guidance on using equipment can significantly impact educational outcomes. These issues reduce students' learning experiences and academic performance. Onyyinkwa, (2010)[30] found that the lack of adequate teaching and learning materials significantly contributed to students' poor academic performance in schools, a situation closely linked to financial resource constraints.

2.4. Challenges to Implement Experiments in Laboratories

While conducting laboratory experiments in real labs provides valuable opportunities for knowledge and skill acquisition, there exist significant limitations and challenges in educational settings. These challenges include the absence of well-trained lab technicians, scarcity of chemicals, equipment, and apparatus, inadequate external and internal facilities, irrelevant manuals, large student numbers, insufficient instructional materials, and inconvenient learning environments (Chali, 2019[12] and Abebe, 2019).[1] Additionally, chemical hazards, lack of self-confidence, the substantial time and effort required for accurate experiments, shortage of lab technicians, lack of well-organized laboratory spaces, large class sizes, high costs associated with purchasing chemicals and equipment, and a shortage of qualified and experienced teachers all contribute to barriers in practical chemistry education (Tatli&Ayas, 2013,[35] Geberekidan et al., 2014).[16] The lack of effective risk management within both internal and external laboratory environments can negatively impact science learning outcomes. Inadequate safety protocols and risk management practices can lead to hazardous conditions that not only compromise student safety

but also disrupt the learning process, thereby affecting the overall effectiveness of laboratory education (Tziakou et al., 2023).[37] Tyokumber (2010)[36] noted that developing countries, experiments within practical science (particularly chemistry) courses are often hindered by resource constraints, scarcity of safety-sensitive materials, and an emphasis on theoretical knowledge rather than practical skills. Abebaw (2020)[2] and Berhane et al., (2024)[9] research report suggested that shortage of chemicals and equipment, insufficient lab training, and inadequate administrative support, and the available chemicals and apparatuses are poorly organized, insufficient storage facilities and inadequate laboratory infrastructure were major obstacles to learn practical activities. Adamu and Achufusi-Aka (2020)[4] research findings indicated that the type of instructional methods used to integrate practical work into chemistry teaching is greatly influenced by the teachers' qualifications.

3. Material and Methods

3.1. Study Area

The study was carried out at three Universities in southern Ethiopia namely, Arbaminch, Wolaita Sodo, and Dilla University. Arbaminch University, previously known as the Arba Minch Water Technology Institute, provides a wide range of academic programs at various levels. Wolaita Sodo University, established in 2007, offers numerous undergraduate, postgraduate, and doctoral programs, including medical specialties. Dilla University, offers diverse programs across multiple disciplines. These institutions were chosen for their broad academic scope and extensive practical chemistry offerings, making them ideal for examining the difficulties associated with laboratory-based chemistry experiments.

3.2. Research Design

This study utilized an explanatory sequential mixed research design, which is particularly valuable for addressing both the complex nature of phenomena from participants' perspectives and the relationships between measurable variables. The research began with the collection and analysis of quantitative data to identify key factors, challenges. This was followed by qualitative data collection to provide deeper insights and a comprehensive understanding of the quantitative findings. This Quan-qual approach ensured that the quantitative results were thoroughly supported and explained through detailed qualitative insights.

Structured in phases, the research prioritized initial quantitative data collection and analysis. Subsequently, qualitative data was gathered to delve deeper into the quantitative results, offering a more complete understanding of the research questions. This two-phase design is effective for describing quantitative results and addressing unexpected findings from the qualitative phase. Throughout the study, quantitative and qualitative data were integrated to provide a holistic view, as illustrated below (figure-1).

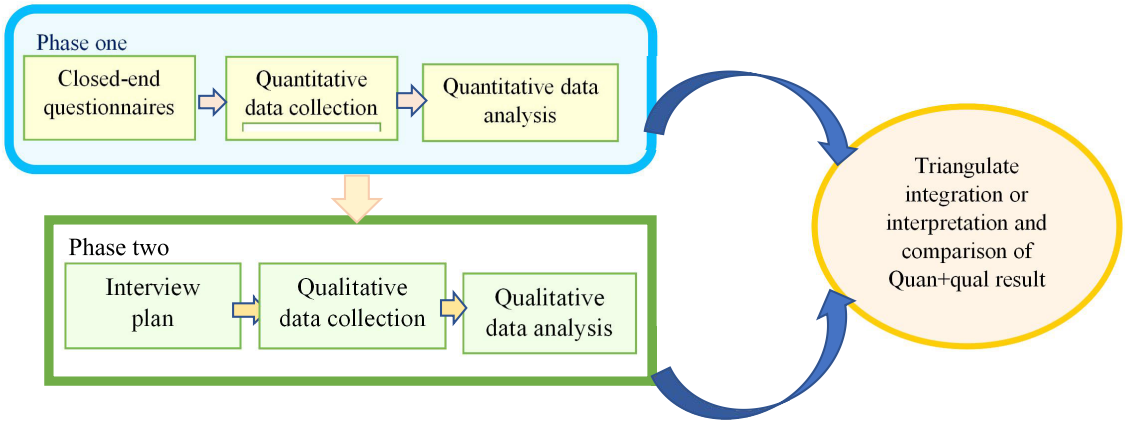


Figure-1: sequential explanatory mixed research design adopted in the study

3.3. Target Population

The target population for this study comprises chemistry instructors and students from the College of Computational and Natural Sciences aforementioned three universities (Table-1).

3.4. Sample Size

Fifty percent of the total population of chemistry instructors was chosen as the sample size. This percentage is commonly utilized in sample size calculations due to its representation of the largest anticipated variability in the population. Thirty out of 60 chemistry instructors at Arbaminch University, eighteen out of 36 chemistry instructors at Wolaita Sodo University, and seventeen out of 35 chemistry instructors at Dilla University were participated. The sample size for undergraduate chemistry students for the study was determined with the Krejcie and Morgan sample size formula (Ahmad, & Halim, 2017).[8] fifty seven out of 60 undergraduate chemistry students at Dilla University, fifty six out of 59 undergraduate chemistry students at Wolaita Sodo University, and seventy one out of 75 undergraduate chemistry students at Arba Minch University participated in the present study.

3.5. Sampling Techniques

To select the chemistry instructors, a simple random sampling technique was utilized. This technique involves randomly choosing individuals from a larger group, which helps in minimizing bias and ensuring that every instructor had an equal opportunity to be selected. For selecting undergraduate chemistry students, a stratified sampling technique was employed. This method involves dividing the population into distinct subgroups (strata) based on specific characteristics, ensuring that each subgroup is adequately represented in the sample. For instance, students were categorized by their year of study (e.g., first year, second year), their section within the year, and their specific stream (e.g., organic chemistry, inorganic chemistry). Samples from each stream were chosen using a systematic sampling system, as summarized in Table 1.

Table-1: Summary of Total Population, and Participants of Each University, 2024

Institutions	No of target population		T. pop.	Participant		T. par.
	Che. Ins.	Und. Che.stu.		Che. Ins.	Und. Che.stu.	
Arbaminch University	60	75	135	30	71	101
Wolitasodo University	36	59	95	18	56	74
Dilla university	35	60	95	17	57	74
Total	131	194	325	65	184	249

Note: chem.Ins.= chemistry instructors, Und.Che.stu.= undergraduate chemistry students, T. pop.= total population, and T.par.= total participant.

3.6. Data Collection Instruments

Aligned with the research objectives, data type, and practical considerations, the researcher employed questionnaires and interviews as research instruments to collect information from the participants.

3.6.1. Questionnaires

The questionnaire used in the study employed a closed-end format, utilizing a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree'. It was structured into two main sections to systematically gather information

Section A: General Participant Information: This section collected demographic data about the participants, such as age, gender, educational background, and teaching experience. Gathering this information helped contextualize the responses and understand how different factors might influence attitudes and perceptions.

Section B: Challenges Encountered: focused on queries related to challenges encountered during the implementation experiments in real laboratory.

3.6.2. Interview

Structured interviews were conducted with five to ten instructors at each selected university. The

selection process considered factors such as gender, work experience, and educational level to ensure a diverse and representative sample. Participants were provided with clear information beforehand to foster trust and encourage candid responses. Consistent questions ensured systematic comparison of responses, focusing on instructors' attitudes towards implementing virtual laboratories.

3.7. Validity and Reliability of the Research Instruments

Validity and reliability tests were conducted on the questionnaires utilized in the study. Psychology experts reviewed the construct and content validity of the questionnaires, which focused on attitudes towards virtual labs and the challenges of implementing and developing virtual labs in chemistry education. Based on expert feedback, several items in the questionnaire were rearranged, revised, removed, and reassessed, to enhance validity.

A pilot test was conducted with the Chemistry Department at Kotebe University of Education in Addis Ababa to assess the reliability of the questionnaires. The pilot test yielded a Cronbach's alpha coefficient of 0.84 for challenges in implementing experiments in a real laboratory. Cronbach's alpha coefficients ranging from 0.8 to 0.9 are considered acceptable, indicating a satisfactory level of internal consistency (Glen, 2015),[17] these results suggest that the questionnaires reliably measure the intended constructs and demonstrate internal consistency.

3.8. Data Collection Procedure

Approval to conduct the investigation was obtained from the Department of Chemistry at Hawassa University. Following the presentation of the authorization letter to the department head in this university, the study's purpose was explained to both chemistry instructors and students. Participants were then selected using a specific sampling method, and oral consent was obtained from them.

Subsequently, closed-end questionnaires were distributed to the selected participants, with duplicates made based on the total number of respondents. Face-to-face interaction was employed for data gathering in this research. Additionally, interviews were conducted with participants, with recordings made via audiotaping and short note-taking. The data from the respondents' responses were then entered into SPSS version 26, and the results were processed. The analysis was performed based on the outputs generated by SPSS.

3.9. Data Analysis Tools, and Techniques

The study utilized a mix of qualitative and quantitative data analysis methods. Descriptive statistics such as percentage and frequency, central tendency measures (like mean), and dispersion measures (such as standard deviation) were utilized. The interview data was analyzed qualitatively through thematic analysis. The analysis began by categorizing the 14 items into a group variables where. Responses were merged by combining "strongly agree" with "agree," And "strongly disagree" with "disagree." Challenges were consolidated into one based on similar responses from at least 50 % and above of the teachers and student respondents. A Kappa test was performed to evaluate the degree of agreement between instructors and students on various challenges associated to conducting experiments in a real laboratory. This evaluation was based on responses from at least half and above of the participants who agreed on these items, using the following kappa interpretation (Artstein & Poesio, 2008).[7]

Table 2. Interpretation of Kappa Test Result

Kappa value	Interpretation
K<0	Less than chance agreement
0< k < 0.20	Poor agreement
021< k < 0.40	Fair agreement
0.41< k < 0.60	Moderate agreement
061< k < 0.80	Substantial agreement
0.81< k < 1.00	Almost perfect agreement

4. Result

4.1. Result

4.1.1. Response Rate

As it is shown in Table-3, the majority of respondents returned the administered questionnaires. The return rate for instructors was exceptionally high at 96.9%, indicating strong engagement and willingness to participate in the study. The students' return rate was 77.7%, which also reflects a substantial level of participation. The Overall, return rate for both groups was 86.3%, this aligned with the criterion of 70% return rate being acceptable for analysis and can be (Mugenda and Mugenda, 2003) [26] and can be called adequate for analysis

Table 3. Response Rate

Respondents	Sample size	Returned questionnaires	Returned rate in %
Instructors	65	63	96.9
Students	184	143	77.7
Total	249	206	86.3

4.1.2. Research Participant Profile

It is observed that the majority of instructors (92.1%) were males, while minorities (7.9%) were females (Table 4). The age distribution indicated that the largest segment of instructors (42.9%) fell within the age range of 31-40 years, followed by the age range of 41-50 years (34.9%). A smaller percentage falls within the age groups of 21-30 years (15.9%) and >50 years (6.3%). The educational qualification of most instructors was Master's science degree (61.9%), followed by a Ph.D.(31.7%), and less instructors had a Bachelor's degree (6.3%). The teaching experience of a large portion of instructors was 11-15 years (33.3%) while a small proportions of instructors had teaching experience of 16-20 years (14.3%) and <5 years (4.8%). The teaching experience of instructors between 6-10 years constitutes 30.2% and those >20 years constitutes 17.4%.

The majority of students (86.7%) were males. The larger number of students (89.5%) falls within the age range of 21-23 years while the smaller number of students were in the age range 18-20 years (3.5%) 24-27 years (6.3%), and 28-30 years (0.7%). The highest proportion of students were in their 4th year (64.3%), and followed by those in their 3rd year (28.0%) and 2nd year (7.7%).

Overall, instructors were predominantly males, with the majority holding a Master's degree and having 11-15 years of teaching experience. Among students, males were more highly represented, with most being in their 4th year of study and aged between 21 and 23 years old. The results indicated that the respondents' age, education level, gender, and work experience were adequate for providing relevant answers to the questions posed.

4.1.3. Challenges to Implement Chemistry Experiments in Real Laboratories

A majority of instructors (51 or 69.8%) and students (99 or 74%) agreed with the statement in item code CR1 (Table-5.1). The kappa coefficient of this item was 0.504, which is within the 0.41 to 0.60 range, reflects a moderate level of agreement among participants. This suggests that the allocated credit hours for the practical chemistry course are insufficient relative to the time required for conducting experiments in the laboratory.

Eighty one percent of instructors disagreed with the statement provided in item code CR2 (Table-4.1), this suggested that no replacing practical courses with theoretical ones due to lab-related problems. Meanwhile, a significant proportion of students (46.9%) believe practical chemistry course should be replaced by theoretical ones due to lab-related issues, highlighting a discrepancy in perceptions of the practicality of lab work.

For item code CR3, 49.2% of instructors agreed with the provided statement (Table-4.2). This suggests that both groups acknowledge that lecturers might lack motivation due to the extra effort required for lab work.

A majority of instructors (53.9%) and students (51.8%) disagreed with the statement provided in item code CR4 (Table-4.2), this showed that Student interest and collaboration in lab work not obstacle to conduct experiments in real lab.

Table 4. Respondent's Demography Profile

No.	Item	Respondents			
		Che. Ins. (N= 63)		Und. Che. Stu.(N= 143)	
		Frq.	%	Frq.	%
1	Gender	Male	58	92.1	124	86.7
		Female	5	7.9	19	13.3
		Total	63	100	143	100
2	Age	Instructors				
		21-30	10	15.9		
		31-40	27	42.9		
		41-50	22	34.9		
		>50	4	6.3		
		Students				
		18-20			5	3.5
		21-23			128	89.5
		24-27			9	6.3
		28-30			1	0.7
3	Educational level / year	Ph.D/DEd	20	31.7		
		MSc/MEd	39	61.9		
		BSc/BEd	4	6.3		
		2nd year			11	7.7
		3rd year			40	28.0
		4th year			92	64.3
4	Working experience	< 5	3	4.8		
		6-10	19	30.2		
		11-15	21	33.3		
		16-20	9	14.3		
		>20	11	17.4		

Note: Che.Ins. = chemistry instructors, Und. Che. Stu. = undergraduate chemistry students, Frq. = frequency

Table.5. Descriptive Statics Results of Challenges of Real Laboratory
Table 5.1. Curriculum and Course Structure Factors

Item codes	Items	Alt.	Freq. (%)		M		SD	
			Ins.(N= 63)	Stu.(N= 143)	Ins.	Stu.	Ins.	Stu.
CR1	The credit hour given for the practical chemistry course not match the time allotted to conduct experiments in the lab	SA	21(33.3)	28(19.6)	3.7	3.7	1.3	1.1
		A	23(36.5)	78(54.5)				
		N	2(3.2)	11(7.7)				
		DA	11(17.5)	17(11.9)				
		SD	6(9.5)	9(6.3)				
CR2	A practical course in chemistry should be replaced by a theoretical course due to laboratory-related problems	SA	5(7.9)	11(7.7)	1.8	2.9	1.1	1.3
		A	2(3.2)	56(39.2)				
		N	5(7.9)	19(13.3)				
		DA	17(27.0)	23(16.1)				
		SD	34(54.0)	34(23.8)				

Note: Alt. = alternatives, Ins. = instructors, stu. = students, Frq. = frequency, M= means, SD= standard deviation, SD= strongly disagree (1), DA = disagree (2), N= neutral (3) A= agree (4) and SA= strongly agree (5)

For item code CR5, the majority of instructors (49 or 63.5%) and students (94 or 65.8%) agreed with the statement (Table-4.2). The kappa coefficient of this item was 0.388, which falls within the range of 0.21 to 0.40, indicates a fair level of agreement between students and instructors. This suggests that both groups believe that inadequate lecturer preparation and readiness impede the implementation of experiments in the laboratory.

For item code CR6, the majority of instructors (59 or 93.7%) and students (123 or 86%) agreed with the provided statement (Table-4.3). The kappa test yielded a kappa coefficient of 0.81, which falls within the range of 0.11 to 1.00, indicating almost perfect level of agreement among the participants. This indicates that both groups believe that lack of necessary chemicals and equipment are the most critical challenges to conduct experiments in real lab.

For item code CR7, 48 instructors (50.8%) and 99 students (66.5%) agreed with the statement (Table-4.3). The kappa coefficient of 0.263, falling within the 0.21 to 0.40 range, indicates a fair level of agreement between students and instructors. This suggests that issues related to laboratory size hinder the effective conduct of experiments.

Fifty five of instructors disagreed with statement CR8 (Table-4.3), indicating that the lack of laboratory room for each practical chemistry course does not pose a hindrance to conducting experiments in a real laboratory. Conversely, a substantial majority of students (56.7%) viewed incomplete laboratory room for each practical chemistry course as a significant challenge to learning the course effectively

For item code CR9, a majority of instructors (35 or 55.6%) and students (99 or 66.4%) agreed with the statement (Table-4.4). The kappa coefficient of this item was 0.344, which falls within the 0.21 to 0.40 range, indicates a fair level of agreement between students and instructors. This suggests that both groups believe the lack of necessary lab technicians' skills, due to insufficient training, impedes effective learning of experiments in the laboratory.

Table 5.2. Instructors and Student Motivation and Preparation Factors

Item codes	Items	Alt.	Freq. (%)		M		SD	
			Ins.(N= 63)	Stu.(N= 143)	Ins.	Stu.	Ins.	Stu.
CR3	Lecturers lack motivation to conduct practical because lab work requires an extra amount of effort	SA	8 (12.7)	16(11.2)	3.0	3.3	1.2	1.2
		A	23(36.5)	65(45.5)				
		N	2 (3.2)	12(8.4)				
		DA	19(30.2)	39(27.3)				
		SD	11(17.5)	11 (7.7)				
CR4	Students are not interested in learning chemistry practical work in the lab because they do not collaborate with each other's	SA	2 (3.2)	19(13.3)	2.6	2.8	0.9	1.4
		A	18(28.6)	36(25.2)				
		N	9 (14.3)	14 (9.8)				
		DA	20(31.7)	42(29.4)				
		SD	14(22.2)	32(22.4)				
CR5	Lecturers lack proper preparation and readiness to tackle problems associated with lab experiments	SA	17(27.0)	33(23.1)	3.5	3.6	1.4	1.2
		A	23(36.5)	61(42.7)				
		N	6 (9.5)	13(9.1)				
		DA	10(15.9)	29(20.3)				
		SD	7(11.1)	7(4.9)				

Note: Alt. = alternatives, Ins. = instructors, stu. = students, Frq. = frequency, M= means, SD= standard deviation, SD= strongly disagree (1), DA = disagree (2), N= neutral (3) A= agree (4) and SA= strongly agree (5)

Table 5.3. Laboratory Resources and Infrastructure Factors

Item codes	Items	Alt.	Freq. (%)		M		SD	
			Ins.(N= 63)	Stu.(N= 143)	Ins.	Stu.	Ins.	Stu.
CR6	Lack of a complete set of chemicals, apparatuses and equipment to do all the experiments	SA	43(68.3)	76(53.1)	4.6	4.2	0.7	1.1
		A	16(25.4)	47(32.9)				
		N	2 (3.2)	5 (3.5)				
		DA	1(1.6)	8(5.6)				
		SD	1(1.6)	7 (4.9)				
CR7	The size of laboratories is too small to accommodate all students	SA	7(11.1)	43(30.1	3.0	3.6	1.3	1.3
		A	25(39.7)	52(36.4)				
		N	4 (6.3)	13 (9.1)				
		DA	17(27.0)	25(17.5)				
		SD	10(15.9)	10 (7.0)				
CR8	Lack of laboratory rooms to conduct experiments for each chemistry practical course	SA	8 (12.7)	34(23.8)	2.8	3.7	1.3	.1.1
		A	19(30.2)	47(32.9)				
		N	1(1.6)	12(8.4)				
		DA	24(38.1)	39(27.3)				
		SD	11(17.5)	11 (7.7)				

Note: Alt. = alternatives, Ins. = instructors, stu. = students, Frq. = frequency, M= means, SD= standard deviation, SD= strongly disagree (1), DA = disagree (2), N= neutral (3) A= agree (4) and SA= strongly agree (5)

For item code CR10, most instructors (37 or 58.8%) and students (101 or 70.7%) agreed with the statement. The kappa coefficient of this item was 0.458, which falls within the 0.41 to 0.60 range, indicates moderate level of agreement between students and instructors. This implies that both groups believed difficulty in identifying supplies and using instruments hindered to perform experiments in real laboratory.

Table 5.4. Technical Skills and Training Factor

Item codes	Items	Alt.	Freq. (%)		M		SD	
			Ins.(N= 63)	Stu.(N= 143)	Ins.	Stu.	Ins.	Stu.
CR9	Lab technicians lack the necessary skills to conduct contemporary chemistry experiments due to inadequate training.	SA	10(15.9)	40(27.9)	3.1	3.2	1.4	1.4
		A	25(39.7)	55(38.5)				
		N	3(4.8)	19(13.3)				
		DA	15(23.8)	27(18.9)				
		SD	10(15.9)	2(1.4)				
CR10	Difficulty in Identifying Supplies and Using Instruments	SA	18(28.6)	48(33.6)	3.5	3.8	1.2	1.2
		A	19(30.2)	53(37.1)				
		N	8 (12.7)	17(11.9)				
		DA	13(20.6)	18(12.6)				
		SD	5(7.9)	7 (4.9)				

Note: Alt. = alternatives, Ins. = instructors, stu. = students, Frq. = frequency, M= means, SD= standard deviation, SD= strongly disagree (1), DA = disagree (2), N= neutral (3) A= agree (4) and SA= strongly agree (5)

For item code CR11, 55 instructors (82.5%) and 116 students (81.2%) agreed with the statement (Table-4.5). The kappa value of this item was 0.750, within the 0.61 to 0.80 range, reflects a substantial level of agreement between students and instructors. This indicates that both groups believe the lack of safety materials impedes the conduct of experiments in the laboratory.

For item code CR12, the majority of instructors (55 or 87.3%) and students (108 or 75.6%) agreed with the statement (Table-4.5). The kappa coefficient of this item was 0.648, which falls within the 0.61 to 0.80 range, indicates a substantial level of agreement among participants. This suggests that both groups believe expired and improperly handled chemicals are obstacles to conducting experiments in the laboratory.

Fifty one instructors (81.2%) and 99 students (69.3%) agreed with the statement in item code CR13 (Table-4.6). The kappa coefficient of this item was 0.65, within the 0.61 to 0.80 range, indicates a substantial level of agreement among participants. This suggested that both groups believed that the lack of careful planning by the university to provide necessary chemicals and equipment one of barrier to conducting experiments in the laboratory.

Forty nine instructors (77.8%) and 99 students (69.3%) agreed with the statement in item code CR14 (Table-4.6). The resulting kappa coefficient of this item was 0.587, which is within the range of 0.41 to 0.60, indicates a moderate level of agreement between the students and instructors. This suggested that both groups viewed that lack of Stakeholder attention hindered to learn experiment in real laboratory.

Table 5.5. Safety and Handling Factor

Item codes	Items	Alt.	Freq. (%)		M		SD	
			Ins.(N= 63)	Stu.(N= 143)	Ins.	Stu.	Ins.	Stu.
CR11	Lack of safety materials (i.e. hood, goggle, lab Gowns….)	SA	32(50.8)	64(44.8)	4.2	4.1	0.9	1.1
		A	20(31.7)	52(36.4)				
		N	5(7.9)	12(8.4)				
		DA	4 (6.3)	9(16.3)				
		SD	2 (3.2)	6 (4.2)				
CR12	Chemicals in the laboratory are expired and are not properly handled	SA	32(50.8)	57(39.9)	4.1	3.9	0.9	1.2
		A	23(36.5)	51(35.7)				
		N	0	11 (7.7)				
		DA	7(11.1)	15(10.5)				
		SD	1(1.6)	9 (6.3)				

Note: Alt. = alternatives, Ins. = instructors, stu. = students, Frq. = frequency, M= means, SD= standard deviation, SD= strongly disagree (1), DA = disagree (2), N= neutral (3) A= agree (4) and SA= strongly agree (5)

Table 5.6. Planning and Stakeholder Involvement Factors

Item codes	Items	Alt.	Freq. (%)		M		SD	
			Ins.(N= 63)	Stu.(N= 143)	Ins.	Stu.	Ins.	Stu.
CR13	Lack of careful planning to fulfill chemicals and equipment by the university	SA	26(41.3)	47(32.9)	4.2	3.8	1.0	1.1
		A	25(39.7)	52(36.4)				
		N	5 (7.9)	22(15.4)				
		DA	7(11.1)	18(12.6)				
		SD	0	4 (2.8)				
CR14	Because Stakeholders are uncooperative in the lab work and pay little attention to the chemistry lab	SA	23(36.5)	34(23.8)	3.9	3.8	1.2	1.0
		A	26(41.3)	65(45.5)				
		N	0	23(16.1)				
		DA	10(15.9)	15(10.5)				
		SD	4(6.3)	6 (4.2)				

Note: Alt. = alternatives, Ins. = instructors, stu. = students, Frq. = frequency, M= means, SD= standard deviation, SD= strongly disagree (1), DA = disagree (2), N= neutral (3) A= agree (4) and SA= strongly agree (5)

For item codes CR6, CR11, and CR12, both instructors and students concurred with the provided statements regarding challenges related to laboratory facilities. This consensus was further supported by interview feedback, which revealed that due to inadequate laboratory facilities; fewer than 50% of the scheduled experiments are conducted in the real laboratory. Some respondents from Dilla and Arbaminch University illustrated this issue vividly.

Respondent X from Dilla University (instructor), said that first of all, science education is worthless without practical works. Therefore, it is true that students should conduct the experiments that involved in practical science courses in the laboratory. As Universities are federal institutions, it is assumed that their resources used for the educational work are fulfilled. However, science laboratories in Universities do not have the resources to carry out part of the experiments that involved in practical science. For instance, I am a teacher of Analytical Chemistry, so there are more than 12 experiments designed in Practical Analytical Chemistry. However, due to limited laboratory resources, I can conduct no more than four of these experiments with my students. Consequently, grades for the practical chemistry course are based not on actual hands-on experience, but rather on teaching the experiments through explanation. When quantified, this amounts to less than half a percent of the intended practical work being carried out.

Respondent Y from Arbaminch University said that I am 4th year Industrial Chemistry students, in our class, there are 39 students. Due to a lack of laboratory resources, insufficient assistants, expired chemicals, and limited space, experiments are primarily conducted in demonstrations. Consequently, learning in this manner is ineffective because large number of students makes it difficult for us to see and understand the demonstrations properly. For example, if 39 students attempt to conduct an experiment with only one demonstration, most of us won't be able to see or carry out the experiment effectively. And as me, I don't count perform experiments. As me, when quantified, I only conduct about 10 percent of the experiments in a real laboratory.

5. Discussion

The study examined the obstacles to conducting experiments in real laboratories, revealing that most instructors (93.7%) and students (86%) cited the lack of chemicals and equipment as significant barriers to learning practical chemistry. This consensus, highlighted by a perfect kappa coefficient of 0.81, emphasizes the severity of the problem. The absence of necessary materials prevents students from conducting the full range of experiments required to develop a comprehensive understanding of practical chemistry, which is crucial for reinforcing theoretical knowledge and developing practical skills. This finding aligned with Chali, (2019)[12] and Abebe, (2019)[1] research finding who reported that scarcity of chemicals, equipment, and apparatus are major obstacles to conduct experiments.

The finding showed that majority of instructors (82.5%) and students (81.2%) identified the lack of safety materials as a major challenge to conduct experiments in laboratory, with a substantial agreement reflected by a kappa coefficient of 0.75. Ensuring a secure laboratory environment is critical, as safety concerns can significantly affect the quality of learning. If students and instructors are worried about their safety, their focus and engagement decrease, leading to reduced science learning effectiveness. This finding is consistent with Limboo et al. (2021),[23] who noted that the lack of safety materials can negatively impact learning outcomes. Also, instructors (87.3%) and students (75.6%) agreed that expired and improperly handled chemicals are significant barriers to conducting experiments in real laboratories, with a substantial kappa coefficient of 0.648. This consensus underscores the importance of proper chemical management for safety and reliable learning outcomes. Improper handling of chemicals not only jeopardizes the accuracy and reliability of experimental results but also poses safety risks, diminishing students' understanding and engagement in lab activities. This finding aligns with Mokoro (2020),[25] who revealed that outdated laboratory equipment and chemicals pose significant challenges for laboratories. Furthermore, 81.2% of instructors and 69.3% of students agreed that lack of proper planning by the university in providing necessary chemicals and equipment as a major obstacle, with

substantial kappa coefficient of 0.653. This suggests that shared view that administrative shortcomings impede effective lab work, disrupting learning and negatively impacting students' practical skills. It is believed that good planning in education is essential for successful learning, especially in the areas of practical instruction. This finding consistent with Ololube (2013),[29] who concluded that proper planning of material resources is crucial for overcoming the challenges faced in education.

The research finding showed that 77.8% of instructors and 69.3% of students believed that the lack of stakeholder attention as hindered to laboratory learning. The kappa coefficient of 0.587 indicates a moderate level of agreement between instructors and students on this issue. Stakeholder engagement is essential for ensuring that laboratories meet current educational standards and technological advancements. This finding is supported by Kufi (2013),[21] who noted that stakeholders wield the most significant influence over instructional and programmatic decisions, which is crucial for improving the learning process, particularly for students. Also, Umar (2017)[38] research finding conclusion indicated that involvement of stakeholders in academic process, has enhanced their expertise in their respective fields. This improvement is evident in their teaching, research, supervision of student projects, and practical work in laboratories. Additionally the finding revealed that both instructors (69.8%) and students (74%) believe that the allocated credit hour for practical chemistry courses is insufficient. The moderate kappa coefficient of 0.504 supports their agreement. This consensus indicates that the current time allocation for laboratory work is inadequate to meet the educational needs and goals of practical chemistry courses, ultimately impacting the depth and quality of experimental learning. Limited time in the laboratory can result in superficial learning, where students may not fully grasp the experimental procedures or underlying principles. Moreover; the finding showed that 58.8% of instructors and 70.7% of students agree that difficulties in identifying supplies and using instruments hinder experiments is a critical issue in the context of chemistry education. The moderate kappa coefficient of 0.0.458 supported this agreement. When instructors and students struggle with equipment, the quality and accuracy of experiments can be compromised. Both instructors and students may experience increased frustration and stress when they cannot easily identify or use the necessary supplies and instruments. This can negatively impact the learning environment and overall morale. This finding aligned with Cavinto (2017)[10] research finding, who found that difficulties in identifying materials and supplies, along with limited access to instrumentation, significantly hinder effective practical instruction in the laboratory.

The study found that 63.5% of instructors and 65.8% of students believe inadequate lecturer preparation impedes laboratory experiments, with a fair kappa coefficient of 0.388 indicating some agreement. Poorly prepared lecturers result in ineffective sessions and missed learning opportunities, affecting students' knowledge and skills. Additionally, 55.6% of instructors and 66.4% of students identified insufficient lab technician training as a significant barrier. The kappa coefficient of this is 0.344, indicating fair agreement. This indicated that insufficiently trained technicians may not be able to set up experiments correctly. This results in incomplete or incorrect experiments, creating gaps in students' knowledge and practical skills, ultimately affecting their academic performance and readiness for future professional roles. Furthermore, 50.8% of instructors and 66.5% of students pointed out small laboratory sizes as obstacles, with a fair kappa coefficient of 0.263. Overcrowded labs reduce hands-on opportunities, increase wait times, and heighten the risk of accidents, leading to frustration and diminished learning experiences. These finding aligns with Chala's (2019) [11] research, which reported that a lack of technician skill competence, instructors' perceptions and motivation, and inadequate laboratory size are major challenges in conducting experiments in real laboratories.

Interview responses from instructors and students further underscore these issues. Specifically, due to

inadequate laboratory facilities, fewer than 50% of the scheduled experiments are conducted in the real laboratory. This highlights a significant gap between the intended practical work and what is actually carried out.

6. Conclusion

The study identified several key challenges in conducting experiments in real laboratories. Based on moderate and above agreement levels, the primary obstacles reported includes: lack of chemicals and equipment: (instructors: 93.7%, students: 86%, kappa = 0.81), lack of safety materials: (instructors: 82.5%, students: 81.2%, kappa = 0.75), expired and improperly handled chemicals: (instructors: 87.3%, students: 75.6%, kappa = 0.648), poor university planning for resources: (instructors: 81.2%, students: 69.3%, kappa = 0.653), insufficient stakeholder attention: (instructors: 77.8%, students: 69.3%, kappa = 0.587), inadequate credit hours: (instructors: 69.8%, students: 74%, kappa = 0.504), difficulty in identifying supplies and using instruments: (instructors: 58.8%, students: 70.7%, kappa = 0.458). These identified challenges collectively impede the effective execution of chemistry experiments in real laboratories. The findings underscored the urgent need for systematic improvements in various areas, including the procurement of essential chemicals and equipment, enhancement of safety protocols, better resource planning by universities, increased stakeholder engagement, sufficient allocation of credit hours for practical courses, and effective management and usage of laboratory supplies and instruments. Addressing these issues is crucial to significantly enhance the quality of practical chemistry education and ensuring the students can bridge the gap between theoretical knowledge and practical skills effectively.

References

[1] Abebe, A.C. 2019. Practice and Challenge Facing Practical Work Implementation in Natural Science Subjects at Secondary School. *Journal of education and practice,* 10 (31):1-17. www. iste.org.

[2] Abebaw, S.A. (2020). Status of chemistry laboratory and practical activities in secondary and preparatory schools of east Gojjam Ethiopia. Chemical and Process Engineering Research, 63: 9-14. www. iste.org.

[3] Abidoye, F.O., .Adebisi, A. M., Rihanat, A.A. and Aliyu, M. Z. (2022). Availability of Laboratory Facilities on Students' Performance in Upper Basic Schools in Kwara State, Nigeria. International Journal of Educational Research Review, 7(2),262-267. www.ijere.com

[4] Adamu, S. and Achufusi-Aka, N.N (2020). Extent of Integration of Practical Work in the Teaching of Chemistry by Secondary Schools Teachers in Taraba State. JSTME 3(2), http://journals.unizik.edu.ng/index.php/istme

[5] Agustain, H. y. and seery, M. K. 2017. Reasserting the role of pre-laboratory activities in chemistry education: a proposed framework for their design. Chemistry education research and practice, 18: 518-532. DOI: 10.1039/C7RP00140A

[6] Agustian, H. Y., Finne, L. T., prgensen, J. T. J., Pedersen, M. I. Christiansen, F.V., Gammelgaard B. and Nielsen, J.A. (2022). Learning outcomes of university chemistry teaching in laboratories: A systematic review of empirical literature. Review of education, 1-41. https://doi.org/10.1002/rev3.3360

[7] Artstein, R., & Poesio, M. (2008). *Inter-coder agreement for computational linguistics*. Computational Linguistics, 34(4), 555-596. doi:10.1162/coli.2008.34.4.555

[8] Ahmad, H., & Halim, H. (2017). Determining Sample Size for Research Activities. Selangor Business Review, 20-34. https://www.scirp.org/reference/referencespapers?referenceid=3038175

[9] Berhane, G. A., Gebrekidan M.T., Goitom G. B., Tesfamariam T. G. (2024). Practices and Challenges in Implementing Chemistry Laboratory Work in Secondary Schools, Africa journal of chemical education, 14(2): 31-57.

[10] Cavinto, G. A. (2017). Challenges and success in implementing active learning laboratory experiments for undergraduate analytical chemistry courses. Annal Bioanal Chem, 490:1465-1470.

[11] Chala, A. A. (2019). Practice and Challenges Facing Practical Work Implementation in Natural Science Subjects at Secondary Schools. Journal of Education and Practice, 10(31): 1-17, http://www.iiste.org/

[12] Chali, A.J. 2019. Major Factors that Influencing Experiments of Chemistry Courses in Nekemte College of Teacher Education, Oromia Region. Annual of Social Science and Management Study, (3) 2: 48-59.

[13] Dahar, M. A. and Faize, F. A. (2011). Effect of the Availability and the use of Science Laboratories on Academic Achievement of Students in Punjab (Pakistan). European Journal of Scientific Research 51(2):193-202. http://www.eurojournal.com/ejsr.htm

[14] Elliot, M. J., Stewart, K. K., and Lagowski, J. J. (2008). The Role of the Laboratory in Chemistry Instruction. *Journal of Chemical Education*, 85(1):145. https://doi.org/10.1021/ed085p145

[15] Fonjungo, P.N., Yenew, K. , Wendy A. , Derese T. , Kedir Y. , Samuel K. , Meseret A. , Waqtola C. , Habtamu M. , Endale T. , Aster T. and Thomas K. (2013). Preservice laboratory education strengthening enhances sustainable laboratory workforce in Ethiopia. Human Resources for Health, 11:56.

[16] Gebrekidan, T., Annette, L. and Lise, K. (2014). Small-Scale Chemistry for a Hands-On Approachto Chemistry Practical Work in Secondary Schools: *Africa Journal of chemical; education*,4(3), 48-94.

[17] Glen, S. 2015. "Cronbach's Alpha: Definition, Interpretation, and SPSS" From Statistics HowTo.com: Elementary Statistics for the rest of us! Retrieved on 7 April 2023 from https://www.statisticshowto.com/probability-and-statistics/statistics-definitions/cronbachs-alpha-spss

[18] Hofstein, A. and Hugerat, M. 2021. The Role of the Laboratory in Chemistry Teaching and Learning. Advance in chemistry education research, 1: 1-15 DOI: https://doi.org/10.1039/9781839164712-00001

[19] Johnson, P. (2023). A Survey To Evaluate Laboratory Activities Across An Undergraduate Engineering Degree Programme: Data From Five Years Showing Repeatability And Sensitivity. European Society for Engineering Education (SEFI). DOI: https://doi.org/10.21427/MNPJ-Z859

[20] Kuchkarov, M.A. 2022. Possibility of using a chemical experiment on the formation of students' critical thinking competencies. European international Journal of Multidisciplinary Research and Management studies, Issue 04: 108-112.

[21] Kufi, F.E. (2013) The role of different stakeholders in Ethiopia in the improvement of educational quality. International Journal of Research Studies in Education, 2(1):11-24

[22] Ligani, S., Anbessa, B. and Kere B. (2016). Assessments of students' practical skill in laboratory: A case study in second year chemistry students of Bule Hora university, Ethiopia in EDUCARE: international journal of educational studies, 9(1): 49-58.

[23] Limboo, A. R., Waiba, P. S., Giri N. and Rinchen, S. (2021). Safety practices in the Chemistry Laboratories of higher secondary schools of Samtse District: A case Study in Bhutan. Journal of Humanities and Education Development, 3(1): 97-110.

[24] Malika, A., Aliahb, H., Susantia, S. Ubaidillahc, M., and Sururied, R. W. (2020). Science Laboratory Activities: A Profile of the Implementation and Constraints of Junior High School Natural Science Teachers. Scientiae Educatia: Jurnal Pendidikan Sains, 9(1): 96-108

[25] Mokoro (2020). Adequacy of Laboratory Facilities for Effective Implementation of Competence-Based Curriculum in Public Secondary Schools in Arumeru District, Tanzania. East

African Journal of Education and Social Sciences, 1 (2): 141-149

[26] Mugenda's, O.M. and Mugenda, A.G. (2003). School Factor and teacher burnout: A perception. Open access library, 3(11).

[27] Najami, N. Hugerat, M. Kabya F.and Hofstein, A. (2020) the laboratory as a vehicle for enhancing argumentation among pre-service science teachers. Journal of science and education, 29: 377-393.

[28] Ndihokubwayo, K. (2017). Investigating the status and barriers of science laboratory activities in Rwandan teacher training colleges towards improvisation practice. Rwandan Journal of Education, 4 (1): 47-54.

[29] Ololube, N. P. (2013). The Problems and Approaches to Educational Planning in Nigeria: A Theoretical Observation. Mediterranean Journal of Social Sciences, 4(12):37-48.

[30] Onyyinkwa, N.R. (2010). Effect of financial constraints on academic performance of pupils in public primary schools. a case study in Kembu division, Birongo village of Kisii district. Kampala International University, College of Education Open and Distance Learning. http://hdl.handle.net/20.500.12306/8349

[31] Pareek, R.B. (n.d). An Assessment of Availability and Utilization of Laboratory Facilities for Teaching Science at Secondary Level. International counseling of association for science education, 3(1): 75-81

[32] Reid, N. and Shah, I. (2007). The role of laboratory work in university chemistry. Chemistry Education Research and Practice, 8 (2), 172-185

[33] Rollnick, M., Zwand, S., Staskuun, M., Lotz, S. and Green, G. (2010), Improving pre-laboratory preparation of first year university chemistry students. International journal of science education, 23(10): 1053-1071. DOI: https://doi.org/10.1080/09500690110038576INT

[34] Shahzadi, I., Hassan H. K. and Zahid, F. 2023. Role of Laboratories and Science Teaching Material in Science Teaching and Students Learning at Secondary Level in Public Schools. *Journal of Development and Social Sciences*, 4(1): 259-264.

[35] Tatli, Z. and Ayas. A. (2013). Effect of a Virtual Chemistry Laboratory on Students' Achievement .*Educational Technology & Society*, 16 (1), 159–170

[36] Tyokumber, E. T.2010. Does Science Education in Developing Countries Really Count? Bulletin of the Ecological Society of America, 432-437

[37] Tziakou, E. · Fragkaki, A.G. , and · Platis, A.N. (2023). Identifying risk management challenges in laboratories. Accreditation and Quality Assurance 28:167–179. https://doi.org/10.1007/s00769-023-01540-3

[38] Umar, F. K. (2017). Perceptions of Stake Holders on the Academic Staff Development Programmes for Laboratory Skills Acquisition in Nigerian Polytechnics. Degree of Doctor of Philosophy (Phd) In Curriculum and Instruction

[39] Zelalem, Z. (2023). Ethiopia higher education expansion and persisting challenges: A systematic review. Journal of medical internet research. https://www.researchgate.net/publication/373420

BILINGUAL PUBLISHING GROUP

Journal of International Education and Practice

https://ojs.bilpubgroup.com/index.php/jiep

ARTICLE

Preparing Students for Study Abroad Success: Expecting Uncertainty Leads to Adaptation

***Lara Astraea Boudinot*[1*] *Lindsey Lahr*[2] *Jim Perry*[3]**

[1] *Department of Biology, University of Oxford*

[2] *Learning Abroad Center, University of Minnesota*

[3] *Department of Fisheries, Wildlife and Conservation Biology, University of Minnesota*

ABSTRACT

Students graduating today join an increasingly complex society with an expectation for awareness of international/intercultural issues. One way to increase this awareness is through an international experience during college. International experiences require the student to face significant challenges because they are part of the experience, and they lead to growth. However, any experience abroad will be replete with uncertainty. Expecting uncertainty, planning to accept it and adapt to it, empowers the learner, and deepens the quality of the outcomes. We represent a PhD student, a study abroad administrator, and a senior professor, each with significant international experience. We offer a series of adaptation principles to help students prepare for international work. These include: 1. Developing a campus anchor; 2. Remaining curious; 3. Seeking the edge of the curve; 4. Remaining true to yourself; 5. Celebrating the variance; 6. Remaining flexible as you select goals; 7. Finding translatable skills; 8. Becoming a storyteller; 9. Taking informed risks; and 10. Envision the future and your role in it. Each is meant to guide and encourage consideration as students prepare for and engage in an international experience.

Keywords: Study abroad; International education; International academic experience; Adaptive behavior; Developing life skills

1. Introduction

As the world, and the problems it faces, become more globally intertwined, it is increasingly important, and often expected, that students incorporate cross-cultural, global perspectives in their education. That perspective often is achieved through an internationally

*CORRESPONDING AUTHOR:
Lara Astraea Boudinot, Ph.D Candiate, Clarendon Scholar, Oxford-Oxitec Natural Motion Scholar, Department of Biology, University of Oxford, UK; Email: lara.boudinot@biology.ox.ac.uk.

ARTICLE INFO
Received: 24 July 2024 | Accepted: 27 Dec 2024 | Published: 15 Jan 2025
DOI: https://doi.org/10.30564/jiep.v7i2.5555

focused experience (Delgado et al. 2013[9], Jones et al. 2021[17], Perry et al. 2021[28]). Currently, we live in a world with dynamic borders where students and faculty need a global perspective to address imminent issues such as climate change, population growth, and global pandemics (Braskamp et al. 2009[4]). Gaining academic perspectives beyond a student's home country can aid in creating the skills and global perspective needed to understand and address the issues we face. Such experiences also help the student evaluate which of the needs of his/her/their home culture are most relevant for individual attention and for personal and professional growth (Calikoglu et al. 2020[5]). Beyond building a global network of peers, an international perspective, traditionally through study abroad experiences, can contribute to a student's skill set and advance employment opportunities (Haisley et al. 2021[13], Lahr et al. 2020[20]). Those gains are often greater for non-traditional students: First generation students who engaged in study abroad later earned higher GPA and graduated sooner than continuing generation students (Ognet et al. 2024[27]). Further, non-traditional students bring a diversity of perspectives that benefits all involved (Aspite-Berina et al. 2024[3]).

International experiences can have a profound impact on a person's self-understanding and personal growth through increased self-confidence, autonomy, emotional resilience, and adaptability skills (Adler 1972[1], Urban and Palmer 2014[34], Maharaja 2018[22]). Students who have developed adaptability and ability to motivate, especially those who have done so through an international experience, have increased career mobility and academic as well as nonacademic well-being (Philips et al. 2017[29], Zabidea et al. 2022[37]). An international experience frequently involves unpredictability and unfulfilled anticipations, potentially resulting in reduced satisfaction and hindering personal development. Entering that experience with an adaptive mindset is imperative for maximizing benefits of any international experience. Research indicates that adaptability not only directly enhances engagement, but it indirectly promotes mindfulness, which can result in heightened immersion (Elphinstone et al. 2019[11]). Optimally, a student enters a study abroad experience "ready to adapt" and deepens his/her/their adaptability through the international experience. This suggests that individuals who are adaptable are more likely to actively participate in and fully embrace their international experience. Furthermore, studies have demonstrated that adaptability is linked to increased resilience, greater job and life satisfaction, as well as reduced stress levels (Urbanaviciute et al. 2019[33]). In fact, flexibility and adaptability have been reported as the criteria most valued by employers (Vendolska and Eliska 2016[35]). This means that individuals who possess adaptive skills are better equipped to bounce back from challenges and setbacks encountered during their time abroad, increasing their career performance and satisfaction post-graduation (Chen et al. 2022[6]).

We write specifically in support of students preparing for an international, academic experience, empowering them to increase adaptability. That experience, whether as guided study abroad or as independent work, will carry uncertainty and surprises (Zemach-Bersin, 2008[38]). For example, students who expected "... an incredible abroad experience…" often were disappointed initially; however, as they engaged with the experience, personal growth and new risk-taking skill, as well as increased self-confidence developed (McLeod and Wainwright 2009[24]). Students who studied abroad reported gaining cross cultural skills and adaptability (Taguchi et al. 2016[31]). Students who tend to be most successful (i.e., developing career-translatable skills, self-understanding and personal development) in studying abroad (for any length of time) are those with confidence in their ability to change their circumstances or alter their environment. Short term experiences abroad, as short as nine days, increase adaptability (Dunlap and Mapp 2017[10], Hsiao et al. 2021[15], Mapp 2012[23]). Design of the abroad experience, as well as interaction with people from another culture strongly influence development of adaptability (Niendorf and

Alberts 2017[25]). Personal reflections like

> *What can I do to make this experience better for myself? How does this relate to my long-term goals? What do I want to get out of this?*

have been shown to make a large difference in study abroad experience decisions, independence, self-reliance, and confidence (Raby et al. 2021[30]).

A reflexive research framework

Many authors have offered frameworks to develop understanding of study abroad experiences, and to guide future work (c.f., Perry et al. 2021[28], Tanhueco-Nepomuceno 2019[32]). Explicitly reflecting on experiences and becoming aware of assumptions deepens understanding and advances growth (Webb et al. 2013[36]). Documenting experiences through a reflective experience is a valuable tool for students during study abroad (Levine & Levine 2004[21]). We believe recursive reflection also is a valuable way to teased out understanding from personal experience guiding the study abroad process. The authors have come to this work from three different perspectives. We follow Zhao et al, (2013[39]) and Kwame (2017[19]) in using personal narratives to implement a reflective model of analysis. We each developed our draft of principles developed from the literature and from personal experiences, then we communally reflected and revised those draft principals.

The three authors are a PhD student (Author 1), an administrator (Author 2), and a senior faculty member (Author 3). We offer personal stories from our experiences to provide context and raise curiosity. Those stories are followed by a series of principles that, we suggest, will allow students to optimize their experience. Our overall guidance is that we strongly encourage students to develop a mindset based on adaptation. That mindset might be framed as *Remember why you started,* asking how that original goal will help you remain centered in difficult times. Finally, the guiding principles were developed from those shared experiences using recursive reflection.

2. Personal Experiences That Have Led Us to Our Guiding Principles

Borneo: A summer in the field

Expectation: I (Author 1) accepted a summer research position in Malaysian Borneo. The position advertised a generous stipend and the development of field skills I needed to refine, as well as the opportunity to travel to one of the most biodiverse places on the planet. I became excited about the opportunity to gain experience trapping small mammals, learning thermogenesis, and participating in night jungle surveys. During the fieldwork, the experience was designed such that I was to conduct a mini-research project for potential publication.

Reality: Upon arrival, I learned that the host government had not issued collecting permits, and the permits would not be approved before I planned to leave. Furthermore, the research team was restricted to remaining on campus, with little opportunity to experience the local culture or explore the natural environment in the way intended. I was not going to achieve a research publication, gain experience trapping small mammals, or learn about thermogenesis, thus I needed to identify my options.

Adaptation: In response to the rapidly evolving situation, I analyzed the situation and sought a way to still get an acceptable experience. After reaching out to my campus anchor for guidance, I determined there was an opportunity to develop a peer reviewed paper through a literature review and experience a small part of the Bornean environment through external connections. By expressing curiosity and a desire for fieldwork, I also was able to participate in several research projects already underway at the host university, strengthening skills in the area I intended to study. My disappointment turned into acceptance of the situation and a strategy for success. By identifying the aspects of the position that I still wanted to achieve, I was able to turn the actual position into a successful experience and increase my awareness of the need for flexible goals for future experiences in other cultures.

Thailand: Neem for yard-long beans

Expectation: I (Author 3) advised a master's student who was part of the Peace Corps International program. In that program, a person takes classes on campus for one year, serves two years on-site with the Peace Corps, and returns to campus for six months to write and defend. The process allows the student to achieve a master's degree and Peace Corps service within 3 ½ years. My field at the time was water quality, so the student and I designed classes and tentative research on that subject.

Reality: Upon arrival, the student was assigned to a resettled village, a dry, upland place to which riparian people had been forcibly resettled when a dam was built. There was no water in sight from the village. Clearly this would have nothing to do with water quality; the student was told to spend two years helping the community develop a marketable program for yard-long beans. Although the villagers had little to no experience with small-scale, commercial agriculture, everyone understood that the beans were marketable, but production was severely constrained by insect pests.

Adaptation: Through extensive interaction with host country staff, we learned which pests were threatening the beans and learned that local people were quite familiar with a range of uses for neem, an Asian tree with a wide range of interesting properties. Those discussions also allowed us to develop communication skills we later used when the student was in-country. While the student was in the Thai village, we conducted a wide range of trials for neem extract preparation, settled on one that allowed the community to thrive, and published two papers as a result. The student's master's experience was successful, although it had nothing to do with water quality.

Tanzania: Understanding wildlife dynamics

Expectation: I (Author 1) enrolled in a field semester in Tanzania through a semester abroad program. The program looked well-structured and offered a detailed itinerary full of exciting events. Further, I would be there with a group of people, whom I had never met, but who had similar interests. I expected to have my days full of wildlife-based field excursions, camping, and trips to the local village. In addition, there was a directed research aspect from which I expected to write a nearly-publication-ready paper.

Reality: Once I arrived, I found the situation to be quite different from my expectations. Due to COVID, most of the activities on the itinerary were canceled or restricted. The field excursions were minimized, camping trips were shortened, and village visits were restricted. The first few weeks were spent within our compound with no outside contact. Additionally, conducting research for the publication would be difficult or impossible given available resources.

Adaptation: All students became visibly upset with the situation, so we vocalized our discontent. The program leader was willing to discuss our issues, clarifying some misconceptions. By remaining true to ourselves and the experiences we desired, we were able to find a solution that encompassed some of the goals we intended to reach. In parallel, we had to accept the changing world and find joy in the small things. For example, seeking to celebrate the variance of the situation and find translatable situations, my roommate and I spent time with the kitchen staff instead of in the village, still learning to prepare local foods and develop meaningful relationships. Additionally, through conversations with my campus anchor, I was able to identify an alternative route to publication for the research I completed there.

Northern Macedonia: Watershed management

Expectation: VOCA (Volunteers in Overseas Cooperative Assistance) asked me (Author 3) to advise on water quality management of a reservoir near Skopje. The core issues were water quality monitoring and protection. The request from VOCA said that algal growth was causing eutrophication and degrading water quality.

Reality: Upon arrival, I was met by a team of engineers who offered a wonderful tour of the wa-

tershed, including the off-season ski lodge where I was to stay. At the conclusion of the tour, my host said, *We'll see you in two weeks for your report*. But at that time, we had identified no problems, no questions, seen no evidence of degraded water quality, and we had not even seen or discussed water quality data. From my perspective, there was nothing about which to report. I was left to wander the watershed, with neither transportation nor language capability, supposedly to develop water quality improvements.

Adaptation: I spent two weeks wandering the watershed, "conversing" with residents across a language barrier. I learned that water quality in the reservoir and lower watershed was excellent; the concern was about future changes. Water quality monitoring was ongoing and effective, and I was able to locate historical data through the agency that managed the dam and reservoir. However, there was no communication between water quality management professionals and water users. Reservoir water supplied a downstream irrigation district, which is where water quality degradation would become apparent if it occurred. I suggested that the opportunity was for a Payment for Watershed Services (PWS) program in which downstream irrigators funded riparian zone practices by small farmers in the headwaters. That PWS program was explained to both upstream and downstream users, ensuring that each understood costs and benefits, providing the knowledge base for integrated watershed practices. Changes were implemented and successful.

Ghana: Co-education in a rural school

Expectation: I (Author 2) led a winter break program in Ghana where the students were to volunteer at a local, rural, community school. The program was designed such that students would assist local Ghanaian teachers in the classroom. Secondary goals were, there would be a reciprocal sharing of experiences and intercultural learning among the U.S. University students and Ghanaian teachers and students.

Reality: The U.S. students were mostly paired with other U.S. students, with no guidance on curriculum, little interaction with Ghanaian teachers, very few resources, and frequently without a local teacher in the setting. The U.S. University students were told to teach local students in the schools.

Adaptation: The U.S. University students worked together to learn what the local students had been learning, then developed educational games from their own experiences to share with the Ghanaian students. The focus shifted from objective pedagogy (i.e., delivering content) to cultural engagement and interaction. We adapted by focusing on the process rather than the product. Through facilitated journaling and processing, expectations of the U.S. University students shifted from formal learning to broad-based relationship-building among the U.S. students, local teachers, and Ghanaian students. The result was a cultural exchange that U.S. students found enjoyable and beneficial; the Ghanaian staff reported that local students and teachers also benefited.

Peru: Don't leave home without it

Expectation: I (Author 3) taught a field class in Peru. We began in Cusco. We planned to spend a day in the city, accommodating to the altitude and experiencing the culture, before we headed to our Amazonian field station, where we planned to spend over two weeks. As we left the hotel, I received a call from the U.S. I encouraged the students to explore the city while I took the call.

Reality: That call came from several administrators (e.g., Learning Abroad Center, General Counsel) who together told me, *Do not leave town.* That was a little disconcerting because all our preparation was for academic content at the field station, all our living expenses at the field station were pre-paid and of course, student expectations were for an Amazon rainforest experience, not something in the City of Cusco. The conversation was uncomfortable, and it took some time to reach a common understanding. I learned that the problem was liability insurance: we would not have adequate coverage at our Amazon field station, placing the university at risk.

Adaptation: I came to understand that the problem was specifically related to motorized vehicles. Through discussion, we developed a plan in which

we were allowed to go to the field station but not allowed to use any motorized transportation while there. That changed my teaching practice; it excluded the use of cars or boats to reach the remote areas I had planned to visit. As a result, some field activities were replaced with others. However, all class objectives were accomplished, and no student goals were compromised. In result, the accommodation did allow us to complete the class safely and have institutional protection while we did so.

Panama: Can I buy you dinner?

Expectation: I (Author 2) helped develop a summer internship program for undergraduate students traveling to Panama; the students would participate in local internships related to their fields of interest, take a core course focused on culture, history and their internship experience, and take Spanish at a local Spanish language school. Homestays were not an option, due to transportation challenges of the archipelago region, as well as limited availability of willing families. Our goal was cultural immersion. Part of that cultural experience centered on meals with local families at their homes. We felt that an evening meal with a local family would achieve several ends. Students would learn about local foods, including how those foods were gathered, prepared, and served, as well as providing opportunities for relationship building and getting a better sense of life in the region. As in any guest appearance, students would bring some small gift for the hostess, which would be a good experience for both the student and the family. We felt that the result would be a low-risk, local, cultural exchange, and connection, as is common in many programs.

Reality: We learned that many local people in this part of Panama have a long and uncomfortable history with "outsiders," a history influenced by colonialism, views of expats utilizing scarce resources, imposing influences of tourism, and disruptive effects of big companies exploiting local people. Further, this part of Panama had high levels of poverty, which meant that it was quite uncommon for a family to invite someone into the home.

Adaptation: We found that the strength of our adaptive response was in young people, as often is the case. We already had identified local young people who were employed to play the role of cultural guides for the student interns. Rather than family meals, the students and local youths visited local restaurants. This alternative offered some element of the desired local connection, provided a two-way cultural exchange, built connections with individuals beyond the students' internship sites, and resulted in students contributing to the local economy. Through this aspect of the program, visiting students were able to experience local and family-run restaurants they would not otherwise have encountered, and the interaction deepened the cultural exchange. Engaging dialogue and learning occurred, albeit in directions and ways we did not foresee.

3. Our Suggested Strategies for Adaptation

The well-known adage, *If life gives you lemons, make lemonade,* is an appropriate context for planning and experiencing international work. There will be uncertainties and surprises, but adaptability leads to resilience. We offer ten, tested strategies that we have used and that we suggest others adapt to their own experiences. At this point in the paper, we intentionally change the tone, writing to the individual student preparing for an international experience.

1. Develop a campus anchor. Having a trusted anchor on campus supports experimentation and overall student success (Christie 2013[7]). As you plan for your study abroad experience, find a faculty mentor in your discipline, or a member of the learning abroad staff who is willing to serve as a reactant and guide. Use that person as a sounding board before you go, and in-country as you develop and try alternative strategies. Communicate with your anchor regularly about your emerging experiences. Rely on that person as a sounding board for both academic and cultural growth. The campus anchor played a pivotal role in our experiences in Thailand, Tanzania, and Borneo.

2. Remain curious. Leaving home with plans

and expectations, and with limited time and resource budgets is a natural behavior. Going overseas for a research experience is immensely exciting and often your first independent journey. When events threaten those plans and those resources, it is challenging. Maintaining curiosity, in the face of adversity increases the probability of finding success among uncertainty and increases perseverance (Feraco et al. 2023[12]). Reflect on your ongoing experiences and ask, *What can I learn from this*? Such a reflection allowed us to redirect and make Panama, Northern Macedonia, Ghana, and Tanzania successful.

3. Seek the edge of the curve. As a study abroad participant, whether in a structured class setting or working independently, you will be learning about your discipline and about the local culture. You will have a desire to advance your own knowledge, and in doing so will encounter the complexities of your host culture's decision-making process. Your power to influence decisions will be relatively limited, leading to a reduction in autonomy which is known to increase motivation for adaptation (Huéscar Hernández et al. 2020[16]). A mantra to keep in mind is *We make our impact as incremental changes at the margin.* Our suggestion is that you try to understand the state of knowledge (yours as well as that of others) and examine the decision being made. Accept that your influence in this setting is relatively small, but there are margins where autonomy can occur. Where are the edges of knowledge; where in decision locus might you influence change without being seen as an outlier or causing conflict? In each of our stories above, we had to accept most of the existing conditions, even though they were different than we understood as we began. And in each case, we were able to say, *Well, if that is true, adding this component or addressing this additional question would allow us to go beyond the expected*, but we did so with small changes that did not disrupt the natural flow of the host program. Stated basically, what must we accept and what can we influence? Accepting the unexpected but seeking the edge changed Northern Macedonia and Panama to success.

4. Remain true to yourself. By the time you embark on your overseas adventure, you will have accumulated experiences that allow you to understand your personal values. As you encounter challenges and are forced to consider changes in direction, remain consciously aware of those personal values. Those values are not static; they evolve through life. You will benefit from routine reflection on the goals that brought you to this time and place. As you consider necessary adaptation, retain behavior patterns that allow you to say *I remained true to myself.* This principle guided us, with some inherent struggles, to success in Borneo and Ghana. It required that we think toward, and accept, adaptability.

5. Celebrate the variance. As humans, we are prediction machines. Every moment, we use data from the world around us to seek patterns and make predictions about the future. Some predictions are very small (e.g., making it safely across the street) and others are very large (e.g., success in graduate school). The variance (i.e., different observations among similar situations) provides the data that allow us to make predictions. As uncertainty threatens our predictive power, it is natural to pull back to the familiar. However, consciously celebrating the variance allows us to gather data to make better predictions; embracing ambiguity increases opportunities for success (O'Connor et al. 2017[26]). The variance among small experiences deepened our learning in Thailand and Borneo.

6. Remain flexible and select goals. It is difficult when things do not go according to plan. Although the situation often will feel out of control, you can influence how you react to the situation and what you get out of it. Flexibility in navigating unpredictable situations can have adaptive advantages, increasing positive outcomes (Croner and Dahl 2012[8]). Build short-term activities that advance long-term goals. Reflect on your goals as you engage. Were you unable to get the desired field skills? Well, can you complete other goals like community involvement? You are here as a learning experience. Ask yourself, *What can I learn that is unexpected but also useful*? Our best examples of this principle are the adaptation required in Borneo and Thailand, although the

principle applies to all our examples.

7. Remember, everything is translatable. An experience abroad will not always go according to plan; in fact, most do not. It is important to remember that most skills are translatable to your future if you can articulate how they relate to your employer in the broader sense (Jones 2013[18]). Although a position or experience may not be in the field you want or may not provide the exact experience you hoped for, with attention, you gain skills for your future. Our experiences in Tanzania and Borneo are expressed as specifically demonstrating adaptability, thus increasing career development.

8. Take informed risks. Life is a risky experience. You are in an unfamiliar environment, trying new things. Be aware of, and respect health and safety. However, be bold. *Fear doesn't prevent death. It prevents life* (Naguib Mahfouz). Consider explicitly seeking places to take informed risks. Try new foods. Think creatively about academic projects. Try experiences that might lead to personal and/or professional growth, but whose outcome is hard to predict. Accept the goal of "attempting to try"; you cannot entirely fail because trying leads to a learning outcome which leads to a transferable skill (Holguin and Lederman ND[14]). Gather information and make an informed decision. Retain humility of spirit and action but be bolder than you might be at home; failing is still learning. As we encountered obstacles in every one of our stories, we adapted. In every case, there was uncertainty, a possibility of failure. And in every case, we achieved an end that was positive but was unexpected and was less than perfect.

9. Become a storyteller. You are embarking on a very personal, unique journey. You will have many experiences that are influenced by others but are unique in the ways you interact with the culture and the environment. You are investing heavily in this experience, financially, emotionally, and in other ways. You can make that experience valuable and more real by sharing it. Storytelling can be a powerful self-reflection tool that increases self-awareness (Andenoro et al. 2012[2]). But sharing a story is a delicate process. Your audience was not there; they have their own perception of the place you went and differing personal experiences that may influence their level of interest in your experience. It is easy to overwhelm your audience with your excitement. One effective way to advance your storytelling skills is to curate lists of "my threes". For example, *my three favorite foods were* …, or *my three biggest surprises were* … Ask how the things you learned are relevant to the people with whom you speak upon your return. Share in ways that help people understand and appreciate your experiences. Share with your family, peers, any speaking opportunity but tailor the three to the audience. We have learned from our experiences, and we now use them to encourage others. Some of that encouragement is to future study abroad students. In other cases, the same ideas help our peers and current U.S. students capture their growth and deepen their learning.

10. Envision the future, and your role in it. Picture yourself five (or three) years into the future. Imagine your professional, academic, and personal self. Consider steps or paths to that future. When there is uncertainty, ask what you would need to know to become clearer about possible futures. This principle is inherent in all of our work. It encourages forward-looking reflection. In all seven of our stories, we found that thinking forward changed our behavior. Envisioning the future in times of uncertainty can help us look at the bigger picture of our experience, which may alleviate some of the pressure of momentary challenges.

4. Conclusion

With a large amount of uncertainty and the inevitable minor failures that come with an international experience, you may feel hesitant about engaging in studying or working in another country. However, the benefits of an international experience are undeniable; they address the growth inherent in becoming more self-aware, and the need to become globally aware. Many argue that such a broadening is necessary for modern society. Through the adaptation principles we offer above, we believe that you can change your perceptions about global experiences

during the college years to make nearly any endeavor a successful one.

Acknowledgments

We are grateful to Professor Maria Clara Starling and Madeline Luskey (a Peer Advisor in the Learning Abroad Center) for comments on earlier drafts of this manuscript.

References

[1] Adler, O.S. (1972). Culture shock and the cross-cultural learning experience. IN: D. S. Hoopes (ed.) *Readings in Intercultural Communication, Volume II*, Pittsburgh: Regional Council on International Education, June, 1972: 6-21. https://www.researchgate.net/publication/246501677_Intercultural_Communication_A_Current_Perspective

[2] Andenoro, A. C., Adrian B. Popa, Caitlin G. Bletscher, and Joseph Albert. (2012). Storytelling as a Vehicle for Self-Awareness: Establishing a Foundation for Intercultural Competency Development. *Journal of Leadership Studies* 6(2): 102–9. https://doi.org/10.1002/jls.21239

[3] Apsite-Berina, E., L. D. Robate, M. Berzins, G. Burgmanis and Z. Krisjane. 2024. International student mobility to non-traditional destination countries: evidence from a host country. Hungarian Geographical Bulletin 72I(2), 133-146. https://doiI10.15201/hungeobull.72.2.3

[4] Braskamp, L.A., D.C. Braskamp and K. Merrill. (2009). Assessing Progress in Global Learning and Development of Students with Education Abroad Experiences. *Frontiers: The Interdisciplinary Journal of Study Abroad* 18(1), 101–118. https://doi.org/10.36366/frontiers.v18i1.256

[5] Calikoglu, A., J.J. Lee and H. Arslan. (2020). Faculty International Engagement: Examining Rationales, Strategies, and Barriers in Institutional Settings. *Journal of Studies in International Education* 26(1), 61-79. https://doi.org/10.1177/1028315320963508

[6] Chen, H., L Pang, F. Liu, T. Fang and Y Wen. (2022). "Be perfect in every respect": the mediating role of career adaptability in the relationship between perfectionism and career decision-making difficulties of college students. *BMC Psychology* 10: 137 https://doi.org/10.1186/s40359-022-00845-1

[7] Christe, B.L. (2013). "The Importance of Faculty-Student Connections in STEM Disciplines". *Journal of STEM Education: Innovations and Research* 14(3). https://www.jstem.org/jstem/index.php/JSTEM/article/view/1797.

[8] Crone, Eveline A., and Ronald E. Dahl. 2012. "Understanding Adolescence as a Period of Social– Affective Engagement and Goal Flexibility." *Nature Reviews Neuroscience* 13(9): 636–50. https://doi.org/10.1038/nrn3313.

[9] Delgado-Marquez, B.L., M.A. Escudero-Torres and N.E. Hurtado-Torres. (2013). Being highly internationalized strengthens your reputation: An empirical investigation of top higher education institutions. Higher Education 66(5), 619-633. https://doi.org/10.1007/s10734-013-9626-8

[10] Dunlap, A. and S.C. Mapp. (2017) Effectively preparing students for international field placements through a pre-departure class. *Social Work Education* 36(8): 893–904. https://doi.org/10.1080/02615479.2017.1360858

[11] Elphinstone, B., R. Whitehead, S. P. Tinker, and G. Bates. 2019. "The Academic Benefits of 'Letting Go': The Contribution of Mindfulness and Non Attachment to Adaptability, Engagement, and Grades." *Educational Psychology* 39(6): 784–96. https://doi.org/10.1080/01443410.2019.1588228.

[12] Feraco, R., E. Sella and C. Meneghetti (2023). Adapt, Explore, or Keep Going? The Role of Adaptability, Curiosity, and Perseverance in a Network of Study-Related Factors and Scholastic Success. *Journal of Intelligence*, 11(2): 34 https://doi.org/10.3390/jintelligence11020034

[13] Haisley, P.K., C. Grandorff, O. Agbonlahor, S.L. Mendez and M. Hansen. (2021). Why Study Abroad: Differences in Motivation

Between US and International Students. *Journal of Global Education and Research* 5(2): 185- 201. https://doi.org/10.5038/2577-509X.5.2.1146

[14] Holguin, B. and H. Lederman. ND Trying without fail. ACU Workshop on Action, Intention and Language, the University of Arkansas. https://www.benholguin.com/uploads/1/1/3/6/113613527/trying_without_fail.pdf [No DOI found]

[15] Hsiao, P.R., C.C. Lin, C.Y. Han, L.H. Wang and L.C. Chen (2021). An enjoyable involvement: A qualitative study of short-term study abroad for nursing students *PLoS ONE* 16(4): e0249629. https://doi.org/10.1371/journal.pone.0249629

[16] Huéscar Hernández, E., J. A. Moreno-Murcia, L. Cid, D. Monteiro and F. Rodrigues. 2020. Passion or Perseverance? The Effect of Perceived Autonomy Support and Grit on Academic Performance in College Students. *International Journal of Environmental Research and Public Health* 17(6): 21-43. https://doi.org/10.3390/ijerph17062143.

[17] Jones, E., B. Leask, U. Brandenburg and H. de Wit. (2021). Global Social Responsibility and the Internationalisation of Higher Education for Society. *Journal of Studies in International Education.* 25(4), 330-347. https://doi.org/10.1177/10283153211031679

[18] Jones, E. (2013). Internationalization and Employability: The Role of Intercultural Experiences in the Development of Transferable Skills. *Public Money & Management* 33(2): 95–104. https://doi.org/10.1080/09540962.2013.763416

[19] Kwame, A. 2017. Reflexivity and the insider/outsider discourse in indigenous research: my personal experiences. *Alternative-An international journal of indigenous peoples*. 13(4): 218-225. https://doi.org/10.1177/1177180117729851

[20] Lahr, L, L. Novack and T. Todd. 2020. #Alternative Facts: Dispelling the myth that short-term programs don't have career development value. IN Anderson, C., K. Hindbjorgen and M Woolf. *Career Integration: Reviewing the Impact of Experience Abroad on Employment* No. 3. 369-78. https://www.academia.edu/61391897/Global_Employability_Common_challenges_in_preparing_students_for_a_global_world_of_work

[21] Levine, A.J.. and S.L. Levine. 2004. Teaching Expatriate Adaptation While Dealing With Reality: The Impact of a Tragedy on the Study-Abroad Experience. *Journal of International Students*. 4(4): 342-350.

[22] Maharaja, G. (2018). The impact of study abroad on college students' intercultural competence and personal development. *Journal of Phi Beta Delta.* 7(2). *https://doi.org/10.14746/ssllt.2019.9.4.6*

[23] Mapp, S.C. (2012). Effect of short term study abroad programs on students' cultural adaptability. *Journal of Social Work Education* 48(4) (Special Issue)" 727-737. https://doi.org/10.5175/JSWE.2012.201100103

[24] McLeod,M and P. Wainwright. 20/09. Researching the Study Abroad Experience *Journal of Studies in International Education* 13(1): 66-71. http://dx.doi.org/10.1177/1028315308317219

[25] Neindorf, B. & H. Alberts (2017). Student Cultural Interaction in a Short-Term Study Abroad Program. *Journal of teaching in International Business.* 28(1): 64–71. https://doi.org/10.1080/08975930.2017.13164

[26] O'Connor, P., K. Becker, and S. Bell. (2017). *Embracing Ambiguity in the Workplace: A New Measure of Tolerance of Ambiguity*. Australia: Queensland University of Technology. https://eprints.qut.edu.au/108255/

[27] Ogden, A. C., H. Z. Ho, Y. W. Lam, A. D. Bell, R. Bhatt, L. Hodges, C. Shiflet and D. Rubin. (2024). The Impact of Education Abroad Participation on College Student Success Among First-Generation Students. *The Journal of Higher Education* 95(3), 285–312. https://doi.org/10.1080/00221546.2023.2182569

[28] Perry, J., A. Sames and S. Galatowitsch. 2021. Empowering culture change: Internationalization in the academic department. *Journal of International Education and Practice* 4: 41-52 https://doi.org/10.30564/jiep.v4i1and2.3501

[29] Philips, L., T. Bloom, T, Gainey, and E. Chiocca. (2017). Influence of Short-Term Study Abroad Experiences on Community Health Baccalaureate Students. *Journal of Nursing Education* 56 (9): 528-533.

[30] Raby, R.L., R. Ward and G. Rhoades. *(*2021). Listening to the Voices of Students Who Studied Abroad: Students and Their Agency to Maximize Their Abroad Experiences. *Journal of International Students.* 11(3), 628-646. https://doi.org/10.32674/jis.v11i3.2857

[31] Taguchi, N., F, Xiao and S, Li (2016). Assessment of study abroad outcomes in Chinese as a second language: gains in cross-cultural adaptability, language contact and proficiency. *Intercultural Education* 27(6): 600–614 http://dx.doi.org/10.1080/14675986.2016.1217126

[32] Tanhueco-Nepomuceno, L. (2019). Internationalization among selected HEIs in the ASEAN region: Basis for a proposed framework for an internationalized campus. *International Journal of Educational Development*, 65: 152–171. https://www.learntechlib.org/p/207613/

[33] Urbanaviciute, I., S. Udayar, and J. Rossier. (2019).“Career Adaptability and Employee Well-Being over a Two-Year Period: Investigating Cross-Lagged Effects and Their Boundary Conditions. *Journal of Vocational Behavior, Career Construction Theory: Conceptual and Empirical Advancements.* 111 (April): 74–90. https://doi.org/10.1016/j.jvb.2018.10.013

[34] Urban, E.L. and L.B., Palmer. (2014). International students as a resource for internationalization of higher education. *Journal of Studies in International Education*. 18(4), 305-324. https://doi.org/10.1177/1028315313511642

[35] Vendolska, I. and K. Eliska. (2016) Flexible Graduate is Successful Graduate. Key Factors of Successful Job Interview, Results of a Comparative Analysis. *Journal of Competitiveness* 8(2): 87 - 102. https://doi.org/10.7441/joc.2016.02.07

[36] Webb, R.J, R. McKellar and R. Kay. 2013. Climate change adaptation in Australia: experience, challenges and capability development. *Australasian Journal of Environmental Management*. 20(4): 320-337. http://dx.doi.org/10.1080/14486563.2013.835285

[37] Zabidea, J., B.I. Issa, and M Fareta-Stutenberg. (2022). Brief but Mighty? Sustained L2 Learning and Perceived Psychobehavioral Benefits After Short-Term Study Abroad. *The Modern Language Journal* 106(2): https://doi.org/10.1111/modl.12777

[38] Zemach-Bersin, T. (2008). American students abroad can’t be ‘global citizens’. *Chronicle of Higher Education* 54(26), A34. [No DOI found]

[39] Zhao, H,Y. and X. Lin. 2013. Teaching for identities, writing between the “we” and the “I” paradigms. *Educational Research Policy and Practice.* 12:133–148 10.1007/s10671-012-9138-9

BILINGUAL PUBLISHING GROUP
Tel:+65 65881289
E-mail: contact@bilpublishing.com
Website:https://journals.bilpubgroup.com

ISSN 2630-516X
02
9 772630 516244