

Hybrid learning: An Introduction to Keeping Pace with Educational Development

Hanadi Alrashdan¹, Hadi Rashed Al Ajmi², Najwa Abdel Hamid Darawsheh^{3,*}, Abdulla Sultan bun Hareb Almheiri⁴, Ibrahim Abdelrahman Eisa Aldarmaki⁵, Mohamad Noor Al-Jedaiah⁶, Mahfouda Rahid Al Mushaiqri⁷ and Nasir Albalawee⁸

¹Department of Educational Foundations and Administration, Faculty of Educational Sciences, Jadara University, Irbid, Jordan

²Department Coordinator of General Materials Al-Ahsa Regional Center, Arab Open University, Al-Ahsa Center for Academic Affairs, Al-Ahsa, Kingdom of Saudi Arabia

³Department of Educational Foundations and Administration, Faculty of Educational Sciences, Jadara University, Irbid, Jordan

⁴Department of Educational Management, College of Humanities and Social Sciences, Zayed university, Dubai, United Arab Emirates

⁵Faculty of Humanities and Social Sciences, Zayed university, Abu Dhabi, United Arab Emirates

⁶ Faculty of Business, Jadara University, Irbid, Jordan

⁷Faculty of Art and Science, University of Nizwa, Nizwa, Sultanate of Oman

⁸Department of Law, Faculty of Law, Jadara University, Irbid, Jordan

Received: 20 Aug. 2023, Revised: 20 Sep. 2023, Accepted: 28 Sep. 2023.

Published online: 1 Oct. 2023.

Abstract: In light of the growth of necessary technological tools, hybrid education has become one of the necessities of the digital age, the study aimed to consider the method that can be used to provide high-quality hybrid education, the descriptive survey method was used, the study sample consisted of (850) male and female teachers, the questionnaire was used as a tool for the study, the results showed that the evaluation of all parties involved in hybrid education is modest, and according to the results, the results showed that higher education will be facilitated through the constructive contributions made by the parties to the strong IT infrastructure and quality, based on the findings, the researcher recommends Facilitating higher education through constructive contributions made by parties to strong IT infrastructure and quality.

Keywords: Hybrid education, Hybrid learning, Educational Development, Quality.

1 Introduction

One of the initial demands for a tool to ensure a thorough educational process gave rise to hybrid learning (HL), the government's ability to employ information technology (IT) in educational procedures has expanded as a result of the COVID-19 epidemic, most governments improved the IT infrastructure in schools to support online learning as a replacement for traditional classroom instruction.

The pandemic altered technical requirements, which improved global education processes by addressing new needs [1].

The development of societies depends to a large extent on the quality of the inputs and outputs of the educational system in them. The modern world is witnessing Rapid developments in all fields, especially in the fields of science and technology, which requires making changes in the structure of the educational structure to adapt to intellectual changes.

Economic and social, and in a manner consistent with developments in the educational and technical fields, in order to advance the school as a basic unit for educational development [2]. Therefore, the focus is now on producing new graduates who match economic market expectations due to the new focus on the learning process [3]. All of the above initiatives call for a fresh approach to the educational process, as a method that focuses on the outputs and input quality of the non-traditional education process, fulfilling all the current standards [4]. Therefore, schools' communication with local communities is a supportive element in improving the effectiveness of the educational process, as schools actively participate in the community and provide valuable services that are supportive of improving the effectiveness of the educational process, community service is a fundamental value that is developed among students, by linking its programs to the philosophy of sustainable human development, and by participating with local community institutions in which it works in service programs and projects, and offering direct social programs through its own initiatives, which are based on serving local communities in a way Professional [5]. For instance, Friedman et al. [4] characterize partnership hybrids as closely coordinated classrooms that provide students access to additional resources and

*Corresponding author e-mail: najwadarawsha@gmail.com

encourage an active learning style. It strives to close the gap between the community and the educational system for the benefit of students and residents. Additionally, Poderyt [6] addresses how summer schools might be viewed as hybrid educational settings that incorporate academic material with commercial and leisure components. Azad, Williams, Minton, Sheridan, & Mandell [7] emphasize the need of parent-teacher collaboration in implementing evidence-based approaches for students with special needs. The dual capacity-building framework for family-school partnerships is presented by Mapp and Kuttner, who emphasize the necessity of cooperation and capacity building among all stakeholders [8].

For a hybrid educational (HE) process to be effective, it is necessary to rehabilitate the parties involved, including instructors, students, parents, the infrastructure, and those in charge of overseeing the educational process [1]. Due to their direct or indirect involvement in the hybrid learning process, all of the above parties provide cause for worry, the social, contextual, and communal components of learning were taken into account by the situated learning theory.

These three elements that make up the learning process are formed by the parties that were previously suggested [9]. These parties have distanced the educational process from its conventional conception, which focused primarily on the classroom. At the educational and governmental levels, a number of factors obstruct hybrid education. Regarding these two criteria, teachers and curriculum come first. According to Goodyear [10], the curriculum served as the foundation for the learning plan. Engineering curriculum is crucial to the hybrid educational process. According to Kirschner [11], the hybrid education curriculum should take into account the cutting-edge learning environment.

Zitter and Hoeve [12] contend that both information and communication technologies should be covered in the curriculum. The introduction of material that will help students develop comprehensive knowledge should be the focus of the initial section of the curriculum design. On the other hand, the adoption of hybrid education should be taken into consideration as a way of information introduction. Online education is seen as a hybrid kind of instruction, the curriculum should be altered for online instruction so that knowledge is introduced in ways that are simple and useful and that correspond to the students' learning levels.

According to Nguyen [13], the sort of curriculum-included material should match the success of online learning. The right content will make it easier to introduce it on the one hand and make it simpler for students to manipulate it online on the other.

According to Grushka-Cockayne [14], the curriculum design should incorporate films that aid students in comprehending the scientific context of the subject matter. Additionally, he recommended that the curriculum for hybrid education include labs that help students comprehend scientific ideas as well as case studies that present instances of real-world situations that may be the curriculum reflects this. The introduction of the curriculum created for hybrid education is centered on teachers and educational supervisors.

The use of conventional curricula to be presented online or via non-traditional methods like videos which posed a huge difficulty for them was one of the issues encountered by instructors through the COVID-19 epidemic. Moving to online instruction was good for certain instructors during the COVID-19 epidemic, while it was bad for other groups [15]. The implementation of online education in Jordan's public schools proved problematic, but it was well-received in the sector's private schools, the research indicated that the views of lecturers in universities were positive to utilize online training as a replacement for in-person instruction or as a supplement to in-person instruction [16]. The inability to properly employ the teaching platforms and technology throughout the educational process led to conflicts in attitudes between professors and students, despite their best efforts [17]. Teachers need practical training to prepare them to use hybrid education in the future since they lack the skills to use online education in emergency situations. There were oversights in the earlier governorate- and school-level preparations for online instruction.

Physical education was preferred by the teachers since they had not been trained to use internet instruction, one of the difficulties of the online educational process was the professors' inability to manage online classrooms [18]. Another difficulty teachers faced was managing pupils' and their own emotions. Furthermore, unlike physical education, which gives students more time, students find it difficult to get in touch with professors to ask questions about many topics connected to their classes [19].

The primary barrier to choosing and utilizing online education as a hybrid educational process is the inadequate experience of teachers in enhancing and practicing the sentiments of the students online. It is believed that the effectiveness of the online and hybrid educational processes depends on the IT infrastructure at the governmental and educational levels. According to Lawrence & Fakuade, [20]; Ramij & Sultana, [21]; Sangeeta & Tandon, [22], the financial capacity to create such educational circumstances for instructors and students to be able to participate in the hybrid educational process is related with the IT infrastructure.

Owing to the difficulty of providing IT infrastructure at home owing to cost or the complete lack of internet access, hybrid education is not preferred in the educational process, especially in underdeveloped countries [23] (Joshi et al.,

2020). and the government's limited ability to provide students' fundamental requirements put an end to the desire to continue using hybrid education. Physical education was supported in the educational process despite the expense of preparing government schools to use hybrid education [24] The experience of adopting non-traditional educational techniques has nonetheless become a unique component of the educational process, despite the limited ability to enhance infrastructure.

The group that benefits from the blended educational process are parents, due to their interest in their children's excellence [25]. According to Franklin et al, parents are crucial to the hybrid educational process [4]. Although a small group of parents participate in planning the educational process (Rasmitadila et al., 2020), Franklin et al. (2015) believe that parents have a crucial role in the blended educational process [26].

One of the roles that parents contribute to is managing the online educational process to ensure their children's ability to participate and interact with this new type of education (Maspul & Amalia, 2021) [27]. In other roles, parents were the instructors who taught their sons the lessons and guided them. The role also expanded to be the motivator for their sons to keep their production at the highest level through online learning.

During the COVID-19 pandemic, the past parental responsibilities were apparent through online schooling, contend parents' contributions to providing the resources necessary for hybrid or online schooling at home go beyond their own efforts [27]. Due to this distinction, the hybrid and online educational processes are directly impacted by the financial situation of the parents. Online learning during the COVID-19 epidemic revealed this outcome, where the educational success of the kids was impacted by the unavailability of smart sets [28].

Combining online and offline learning with the use of digital technology to improve teaching and learning processes is known as hybrid education integration in schools. It necessitates reconsidering how the classroom is set up, creating a pedagogical strategy, and implementing efficient time management in the classroom (Silva & Bento, 2019). Different models, including curriculum-based, activity-based, standards-based, and media-based methods, are available to teachers for incorporating hybrid online education. In order to accommodate hybrid models, physical learning environments should be adjusted to take into account the requirements and perceptions of students [29]. A "third space" has been established by the integration of classroom and online learning environments as a result of the introduction of new technology into educational settings, raising questions about how knowledge is transmitted, how teachers and students interact, and how learning takes place. Dialogue [30]. Schools may make the most of their resources and students' learning potential by using hybrid course instruction [31].

2 Study Problem

The COVID-19 pandemic served as a real-world test of how well educational systems might implement hybrid education in elementary school and university courses, the availability of the internet in remote locations and adequate internet speed in metropolitan areas were the biggest obstacles to using online education as a substitute for physical education, the vast majority of internet users simultaneously reduced the internet's quality, the use of hybrid education in schools will often be hampered by these challenges. Some nations, like Jordan, focused on directing the physical education process rather than identifying infrastructure-related fixes to support hybrid schooling.

Hence the idea of the study came to reveal the level of hybrid learning in Jordanian schools, and to demonstrate the impact of the capabilities of higher education parties (curriculum design, teachers' capabilities, supervisors' capabilities, and parents' contribution) and the intermediaries (school information technology and home information technology infrastructure) on the quality of education High.

3 Study questions

To reveal the problem of the study, the following questions were answered:

The first question: **What is the level of hybrid learning in Jordanian schools from the teachers' point of view?**

Second question: **What degree is the effect of HE parties' capabilities (curriculum design, teachers' capabilities, supervisors' capabilities and parents' contribution) and mediators (school IT and Household IT infrastructure) on HE quality?**

Objective: By analyzing the inputs of HE and the infrastructure required for this sort of learning, the goal of this research is to analyze attitudes toward adopting hybrid education as a unique educational method.

Limits and limitations of the study: This study was limited to a sample of Jordanian school teachers for the academic year (2021/2022). This study was limited to their response to the study tool, and its psychometric properties of validity and reliability.

4 Methodology and Procedures

Approach: The descriptive approach was used to achieve the objectives of the study and answer its questions. This approach describes the phenomenon to be studied, analyzes its data, and interprets it.

Population and sample: A straightforward tool for randomized sample selection was used to choose a random sample of instructors. 850 instructors from both public and private schools were among the (850) teachers in the sample. The COVID-19 protection protocols were removed, allowing for the physical distribution of the questionnaire through direct interaction with instructors in both educational sectors. The questionnaire may be completed online by the teachers. Table (1) shows the distribution of sample members:

Table 1: Demographic characteristics of teachers.

| Character | Frequency | Percent |
|--------------------------|-----------|---------|
| Gender | | |
| Male | 404 | 48.6 |
| Female | 446 | 51.4 |
| Age | | |
| <30 years | 93 | 10.7 |
| 30-40 years | 207 | 24.6 |
| 41-50 years | 375 | 44.1 |
| > 50 years | 175 | 20.7 |
| Experience | | |
| < 5 years | 37 | 4.3 |
| 5-10 years | 252 | 30.9 |
| 11-15 years | 282 | 32.1 |
| > 15 years | 280 | 33.1 |
| Educational level | | |
| Bachelor | 366 | 41.8 |
| Master | 340 | 42.2 |
| Ph.D. | 134 | 17.9 |
| Place of teaching | | |
| Urban | 725 | 85.1 |
| Rural | 145 | 16.9 |

The results show that the males formed 47.6%, while the females formed 52.4% of the sample. The ages of teachers ranged from less than 30 years up to more than 50 years. The highest age distribution was for the age 41-50 years with a percentage of 44.0%, followed by 30-40 years with a percentage of 24.5%. The highest experience distributed among the sample was for the category of more than 15 years of experience with a percentage of 33.0%. The education was distributed among the bachelor's and the master's degrees with percentages of 41.9% and 41.2% respectively.

Study variables:

Table 2 shows the sources of the study variables.

Table 2: Study variable sources

| Author | Study objective | Study variables and items |
|---|--------------------------------------|---|
| Urban/Rural | | |
| Kumar et al. (2021) | IT urban and rural gaps | Compared to rural regions, the opportunities in cities are much increased. |
| Schools' IT infrastructure and compatibility | | |
| Gonzales (2020) | Study readiness for hybrid learning | ICT literacy training |
| Curriculum design for HE | | |
| Gonzales (2020) | Study readiness for hybrid learning | Curriculum re-designing |
| Teachers' capabilities | | |
| WeiZheng et al. (2021) | Evaluating online education in China | Lack of experience to implement conventional plans in HE Doubts about online education |

| | | |
|--|---|--|
| Gonzales (2020) | Study readiness for hybrid learning | The re-engineering mindset of teachers |
| Supervisors' capabilities | | |
| Gonzales (2020) | Study readiness for hybrid learning | Re-evaluation of assessment and grading |
| Household IT infrastructure and compatibility | | |
| (Jr, 2020) | The readiness to join remote learning among university students in Philippine | Poor internet connections, lack of technological devices |
| Zalat et al. (2021) | Challenges of online teaching | Lack of computer laptops, technical problems, unstable internet connection |
| Parents' Contribution to HE | | |
| Maspul & Amalia (2021) | Study the role of parents in hybrid learning | The role of parents is to provide sons confidence and help them scientifically |
| HE quality | | |
| Shimkovich et al. (2022) | Studying HE effectiveness | Gain of knowledge among students Level of students' participation in face-to-face and online learning |

Instruments:

The first method used to impart education during the COVID-19 epidemic was online learning. One of the tools utilized in HE is recognized to be online education [32], Physical education resumed entirely following the relaxation of the COVID-19 pandemic protection regulations, with the exception of the use of online learning under certain environmental conditions.

Information was gathered by using the questionnaire as a technique. Five sections made up the questionnaire, the questionnaire was divided into five sections: the first asked about the sociodemographic characteristics of the teachers (their gender, age, experience, education level, and place of residence (urban or rural)); the second about the infrastructure of the schools and the suitability of the curriculum for higher education; the third about the qualifications of the teachers and supervisors for practicing higher education; and the fourth about the parents' concerns, the sixth section measured the effectiveness of HE based on parents' perceptions. For the various items, a five-point Likert scale was utilized, with (Very high, high, Moderate, Low, Very Low), which representing digitally (5,4,3,2,1), respectively, the following classification was also adopted to judge the arithmetic averages of the items: (1-2.33: low), (3.67-2.34: medium), and (3.68-5: high).

Validity of the Instrument:

To verify the validity of the study instrument, the content validity method was adopted, the initial questionnaire was presented to nine experts who are university professors specializing in educational administration and educational policies in Jordanian universities, they were asked to review the questionnaire items and delete, modify, add, merge, or rephrase and clarify certain statements they deemed inappropriate from their perspective, the experts reached a consensus on the accuracy of a significant number of items, proposed modifications to the phrasing of some items, which were already revised, and suggested additional items, the researchers collected the feedback, made the necessary revisions and additions based on the experts' suggestions.

Finally, their comments were taken into consideration about the appropriateness of the questionnaire for the Hybrid learning: An Introduction to keeping pace with Educational Developments, until the final copy was approved, which consisted of (35) paragraphs.

Validity and Reliability: To receive input on the items' adequacy for measuring the research variables, the initial draft of the questionnaire was given to a panel of specialists. To assess the sample's validity and linguistic fit, the second edition of the questionnaire was given to a pilot sample of (30) instructors, two methods were used to verify the reliability of the study instrument by calculating the coefficient of consistency of internal consistency through the Alpha-Cronach coefficient Table.

Table 3: Results of internal consistency (Cronbach alpha) for the study measures

| Variable | Cronbach's Alpha |
|--|------------------|
| Schools' IT infrastructure and compatibility | 0.82 |

| | |
|-----------------------------|------|
| Curriculum design for HE | 0.78 |
| Teachers' capabilities | 0.86 |
| Supervisors' capabilities | 0.76 |
| Household IT infrastructure | 0.92 |
| Parents' Contribution to HE | 0.96 |
| HE quality | 0.94 |

Study variables:

Independent variables: Gender, Age, Experience, Educational level, Place of teaching

Dependent variables: Hybrid Learning

5 Results

The first question: **What is the level of hybrid learning in Jordanian schools from the teachers' point of view?** To answer this question, the arithmetic averages and standard deviations for the level of hybrid learning in Jordanian schools were extracted from the teachers' point of view, and the table below shows this.

Table 4: Arithmetic means and standard deviations for the level of hybrid learning in Jordanian schools, arranged in descending order according to the arithmetic means.

| No | Item | Mean | SD | Rank | Degree |
|-------------|---------------------------|-------------|-------------|----------------|---------|
| 3 | HE quality | 3.67 | 0.48 | 1 | |
| 1 | School IT | 3.56 | 0.52 | 2 | Average |
| 5 | Household IT | 3.55 | 0.52 | 3 | Average |
| 3 | Parents' contribution | 3.53 | 0.53 | 4 | Average |
| 2 | Teachers' capabilities | 3.52 | 0.53 | 5 | Average |
| 4 | Curriculum Design | 3.46 | 0.57 | 6 | Average |
| 6 | Supervisors' capabilities | 3.46 | 0.52 | 7 | |
| Tool | | 3.54 | 0.52 | Average | |

Table (4) shows that the arithmetic averages ranged between (3.46 - 3.67), where the HE quality field came in first place with the highest arithmetic average of (3.67), while the Supervisors' capabilities field came in last place with a arithmetic average of (3.46), and The arithmetic mean as a whole is (3.54).

The following is a presentation of each item with its paragraphs according to the arithmetic averages

1. HE quality

The arithmetic averages and standard deviations for the range are shown as follows:

Table 5: Teachers' trends for the evaluation of HE quality

| No | Item | Mean | SD | Rank | Degree |
|-------------------|---|-------------|-------------|--------|--------|
| 33 | The HE affects the students' progress positively | 3.72 | 0.76 | 1 | high |
| 34 | The satisfaction of HE increased among the education parties | 3.72 | 0.74 | 2 | high |
| 35 | The HE became a very basic integration for the traditional teaching process | 3.72 | 0.78 | 3 | high |
| 32 | The student's progress is very high through HE | 3.71 | 0.73 | 4 | high |
| 31 | HE quality increased widely utilizing the experience gained from COVID-19 | 3.57 | 0.74 | 5 | medium |
| HE quality | | 3.67 | 0.48 | medium | |

The degree to which all parties work successfully toward HE determines its quality. The HE had a mediocre rating with a mean (3.67) and standard deviations (0.48), HE's impact on students' growth, educators' growing satisfaction with HE, and perceptions that HE has integrated into traditional teaching methods received the highest ratings.

2. School IT

The arithmetic means and standard deviations, as follows:

Table 6: Teachers' trends for schools' IT infrastructure and its compatibility with HE

| No | Item | Mean | SD | Rank | Degree |
|----|---|------|------|------|--------|
| 1 | The internet speed is enough to proceed HE without difficulties | 3.71 | 0.72 | 1 | high |

| | | | | | |
|------------------|---|-------------|-------------|----------------|--------|
| 5 | The IT infrastructure is integrated to meet the development in HE teaching | 3.63 | 0.73 | 2 | medium |
| 3 | The capacities of schools to use IT tools | 3.51 | 0.75 | 3 | medium |
| 2 | The hardware infrastructure at the school facilitates the HE | 3.47 | 0.78 | 4 | medium |
| 4 | The teachers can receive the support training to use the IT infrastructure for HE | 3.38 | 0.78 | 5 | medium |
| School IT | | 3.56 | 0.52 | Average | |

The rating for the school's IT system was average (3.56). The highest rating was given to the internet speed (3.71), which makes it easier to connect to the internet during sessions, the IT infrastructure of the school has to be improved to accommodate and keep up with HE development (3.64), to service the HE, the school personnel must be certified to utilize the IT infrastructure (3.51), the physical infrastructure that should support HE was evaluated the least (3.38), followed by the training necessary to use the infrastructure for HE (3.38).

3. Household IT

Table 7: Teachers' trends for households' IT infrastructure and compatibility to practice HE

| No | Item | Mean | SD | Rank | Degree |
|---------------------|--|-------------|-------------|---------------|--------|
| 25 | The type of sets available at home is enough to have HE | 3.68 | 0.78 | 1 | high |
| 21 | The household's internet speed is enough to facilitate the students to practice HE | 3.57 | 0.77 | 2 | medium |
| 22 | The hardware at households is enough to practice HE | 3.51 | 0.81 | 3 | medium |
| 24 | The capacity of sets at home is enough to provide successful HE | 3.47 | 0.81 | 4 | medium |
| 23 | The parents can use the tools of online learning at home | 3.46 | 0.81 | 5 | medium |
| Household IT | | 3.55 | 0.52 | medium | |

The results showed that the household IT infrastructure was evaluated moderately to practice HE (3.55). The highest evaluation was for the type of sets available at home should be enough to practice HE (3.68). In the second rank was the evaluation of the internet speed which facilitates the student to reach the platforms easily (3.57). The hardware should be enough to practice HE (3.51). The capacity of sets should be enough to provide successful HE (3.47). The last rank was for the assessment of the ability to use the tools online to practice the HE (3.46).

4. Parents' contribution

Table 8: Teachers' trends for parents' contribution to HE

| No | Item | Mean | SD | Rank | Degree |
|------------------------------|---|-------------|-------------|------|--------|
| 30 | The parents can follow their progress in online learning | 3.61 | 0.78 | 1 | medium |
| 29 | The parents are satisfied with HE nowadays | 3.55 | 0.73 | 2 | medium |
| 26 | The household parents can provide quiet places for HE | 3.52 | 0.73 | 3 | medium |
| 27 | The parents give help their children to practice HE | 3.51 | 0.77 | 4 | medium |
| 28 | The parents are satisfied with HE as the original part of the education process | 3.46 | 0.86 | 5 | medium |
| Parents' contribution | | 3.53 | 0.53 | | |

The parents form original participants in the success of the HE through their contribution to the process. The assessment of the parents' contribution was moderate (3.53). The highest assessment was for the parents' ability to follow up with their sons in online learning (3.61). The satisfaction of parents for HE was in the second rank (3.55). The third rank was the ability to provide quiet places for sons to practice the HE (3.52). The assessment of parents' help introduction for their children was in the fourth rank (3.51). The last assessment was for the parents' satisfaction with the use of HE as the original part of the HE (3.53).

5. Teachers' capabilities for HE

Table 9: Teachers' trends for their capabilities to practice HE

| No | Item | Mean | SD | Rank | Degree |
|-------------------------------|---|-------------|-------------|------|--------|
| 11 | The teachers can work the online teaching tools | 3.60 | 0.80 | 1 | medium |
| 15 | Teachers can convey the parents of the HE | 3.60 | 0.76 | 2 | medium |
| 14 | The teachers can encourage the students to use technology in HE | 3.50 | 0.83 | 3 | medium |
| 13 | Teachers can modify the curriculum material to meet the HE | 3.43 | 0.83 | 4 | medium |
| 12 | Teachers can design material for HE | 3.42 | 0.74 | 5 | medium |
| Teachers' capabilities | | 3.51 | 0.52 | | |

The evaluation of teachers' capabilities to apply the HE was moderate (3.51). The highest evaluation was for teachers' abilities to work the online teaching tools (3.60). The teachers can encourage the students to use technology in HE (3.50), the evaluation of the teachers' capabilities to modify the material to meet the HE requirements was moderate (3.43). The last assessment was for the ability to design material for HE education (3.42) (Table 6).

6. Curriculum design for HE

Table 10: Teachers' trends for curriculum suitability for HE

| No | Item | Mean | SD | Rank | Degree |
|--------------------------|--|-------------|-------------|---------------|--------|
| 6 | The curriculum structure facilitates the application of HE | 3.56 | 0.87 | 1 | medium |
| 10 | The curriculum suits the teaching of scientific material through HE | 3.53 | 0.88 | 2 | medium |
| 7 | The teaching curriculums considered the HE in their design | 3.42 | 0.79 | 3 | medium |
| 8 | The curriculums can be modified to encourage the application of HE | 3.40 | 0.78 | 4 | medium |
| 9 | The curriculum facilitates the use of practical examples to teach the students | 3.38 | 0.82 | 5 | medium |
| Curriculum Design | | 3.46 | 0.57 | medium | |

The curriculum design should meet the requirements to use the HE in the education process. The results showed that the evaluation of the curriculum design was moderate (3.46). The evaluation of the curriculum structure was the highest with moderate evaluation (3.56). The suitability of the curriculum for scientific material was moderately evaluated (3.53). Also, the teaching curriculums considered the HE in their design (3.42). The evaluation dropped more for the modification of the curriculum to use the HE (3.40). The last evaluation was for the ability of the curriculum to facilitate the use of practical examples to teach the students (3.38).

7. Supervisors' capabilities for HE

Table 11: Teachers' trends for supervisors' capabilities to supervise HE

| No | Item | Mean | SD | Rank | Degree |
|----------------------------------|---|-------------|-------------|---------------|--------|
| 19 | Supervisors believe that the HE became a necessity nowadays | 3.51 | 0.82 | 1 | medium |
| 20 | Supervisors believe that HE is the right procedure to get teachers involved in technology | 3.51 | 0.89 | 2 | medium |
| 16 | The supervisors can supervise the HE sessions | 3.45 | 0.75 | 3 | medium |
| 17 | The supervisors trained to manage the online teaching sessions | 3.45 | 0.77 | 4 | medium |
| 18 | The supervisors recognize the HE teaching tools | 3.44 | 0.84 | 5 | medium |
| Supervisors' capabilities | | 3.47 | 0.51 | medium | |

The evaluation of the supervisors' capabilities for HE was moderate (3.47). The highest evaluation for supervisors believes that the HE became a necessity these days (3.51). The supervisors believe that the HE is one of the educational tools that increase the involvement of teachers using technology (3.51). The assessment of the supervisors' ability to supervise the HE sessions decreased and their ability to manage the online teaching session was in the third rank (3.45). The last evaluation was for the supervisors' ability to recognize the tools needed in the HE (3.44).

Second question: **What degree is the effect of HE parties' capabilities (curriculum design, teachers' capabilities, supervisors' capabilities and parents' contribution) and mediators (school IT and Household IT infrastructure) on HE quality?**

The impact of mediators (school IT and household IT infrastructure) and HE parties' capabilities (curriculum design, teachers' capabilities, supervisors' capabilities, and parents' input) on HE quality is shown in Table 12.

Table 12: The measurements of model fitness measures

| Indicator | Accepted limit | Value | Result |
|-------------|----------------|-------|----------|
| χ^2/df | <5 | 3.05 | Accepted |
| CFI | >0.8 | 0.968 | Accepted |
| PNFI | >0.6 | 0.741 | Accepted |
| RMR | < 0.2 | 0.035 | Accepted |
| RMSEA | < 0.08 | 0.048 | Accepted |

Table 13: The loading factors for the HE parties (TC: teachers' capabilities, SC: supervisors' capabilities, PC: parents' capabilities, CIT: curriculum design), mediators (SIT: school IT infrastructure, HIT: households IT infrastructure) on HE quality (HEQ).

| | | | Estimate | S.E. | C.R. | P |
|-----|------|-----|----------|------|------|------|
| SIT | <--- | CIT | .013 | .506 | .025 | .971 |

| | | | Estimate | S.E. | C.R. | P |
|-----|------|-----|----------|-------|-------|------|
| SIT | <--- | TC | .206 | .392 | .523 | .610 |
| SIT | <--- | SC | .037 | .213 | .176 | .851 |
| SIT | <--- | PC | .174 | .043 | 4.130 | *** |
| HIT | <--- | CIT | -1.090 | 1.101 | -.992 | .312 |
| HIT | <--- | TC | 1.291 | .849 | 1.524 | .138 |
| HIT | <--- | SC | .698 | .456 | 1.526 | .147 |
| HIT | <--- | PC | -.001 | .036 | -.043 | .955 |
| HEQ | <--- | HIT | .704 | .084 | 8.312 | *** |
| HEQ | <--- | SIT | .015 | .021 | .803 | .432 |

6 Conclusions

The objective of this study is to investigate the best approach that can be used to practice HE successfully. The study targeted teachers from urban and rural areas to figure out the difficulties that face HE practices and the effect on HE quality.

The mediators in this study were the school IT and household IT which are considered basics needed to start practicing the HE. The results showed that the different variables of the study were reliable. The results showed that both male and female teachers contributed to the study.

The different ages and experiences were included among the sample of the study. This will reflect the view of the assessment of the HE parties and HE quality from the different views of teachers. Also, different educational levels of teachers were included in the study, which reflects the different views of the different educational levels of the HE contributors and outputs.

The teachers assessed the HE parties' capabilities and inputs moderately. Teachers are considered the first party that success the HE [11]. This shows that the HE requires more improvements to meet the needs and the standards of HE practices. The highest evaluation was for the teachers' capabilities to the contribution of HIM practicing.

The capabilities of teachers to practice the HE was improved through COVID-19 but still the assessment of these capabilities is moderate and requires more improvement to reach the required level for regular practice of HE. Online learning is considered a type of hybrid education, so high concern should be given to its improvement [13].

The second assessment was given for the capabilities to use the curriculum in the HE practices. The teachers showed that the curriculum assessment was moderate and should consider more the consideration of HE practices in the teaching process. Zitter and Hoeye [12] have shown that the curriculum is considered a very important factor that contributes to the success of HE.

The role of teachers in hybrid education is to create opportunities and environments that foster independent and collaborative student learning. They are responsible for explaining the learning significance, content, objectives, schedule, and evaluation methods of the curriculum to students.

Teachers also play a crucial role in upgrading the quality of education by understanding the connotation of teacher quality and cultivating talented individuals.

The curriculum in hybrid education is prepared and introduced to students in the preparation stage of mixed teaching, it aims to improve students' personal core literacy in specific subjects, such as chemistry, through guided laboratory activities. Hybrid education involves the integration of online and offline learning with digital technologies, focusing on personalization and collaboration. It requires rethinking the organization of the classroom, the elaboration of the pedagogical plan, and the management of time in the school.

The capabilities of supervisors to supervise the HE processes were moderately assessed. The role of supervisors to observe the teaching process through HE was limited through COVID-19 and continued to be limited after, the capabilities of supervisors require more improvement to meet the requirements to have complete supervision of the HE processes, the last party related to the parents' contribution was assessed moderately, the results showed that the qualification of parents and households requires high buildings to meet the requirements that facilitate the reach of HE more smoothly for sons under the supervision of their parents.

Educational supervisors play a crucial role in improving the quality of education in various contexts. They engage in activities such as inspecting, advising, monitoring, and reporting, coordinating, and performing leadership tasks to enhance the quality of education.

They are responsible for providing leadership, direction, information, motivation, and support to teachers and students, educational supervision offers the opportunity for effective mentoring, where supervisors can provide guidance and support to learners in their academic, professional, and personal development (Ismail, 2018). They can discuss learning styles, progress with training, time management, and career plans with the learners.

Additionally, supervisors can ensure that learners demonstrate high standards of medical professionalism and offer pastoral support to those facing difficulties, by fulfilling these roles, educational supervisors contribute to the overall quality of education in hybrid learning environments.

The mediators related to the school IT infrastructure and the household IT were assessed as strong contributors to the success of HE. The results showed that the concern with IT infrastructure at school and home should increase to meet the requirement to practice the HE and accomplish high-quality processes.

The results showed that the mediators are affected by the HE parties and on the other hand affect the HE quality. Simons [1] reported that the success of HE requires the improvement of the elements that form major contributors to this process.

The role of school and household IT infrastructure is crucial in hybrid education in schools. The availability of basic ICT infrastructure facilities in schools is an important factor in the implementation of ICT in teaching and learning processes.

Additionally, the study emphasizes the importance of information technology infrastructure and organizational support in the acceptance of hybrid e-learning courses by learners, furthermore, the concept of educational infrastructure is highlighted as a lens to examine the implementation of technology programs in schools, suggesting that technology can act as an infrastructure itself and support changes in teaching and learning, these findings indicate that both school and household IT infrastructure play a significant role in facilitating and enhancing hybrid education in schools.

7 Recommendations:

Based on the findings, the researcher recommends the following:

- Facilitating higher education through constructive contributions made by parties to strong IT infrastructure and quality.
- In order to succeed in schools, happiness parties and IT infrastructure must be renewed.
- Conduct more research on artificial intelligence and its use to develop all educational and administrative elements in schools and improve teaching methods for faculty members in the era of digitalization.
-

8 Future Research

Future research should concentrate on the assessment of HE through the use of students' accomplishments in the schools' records.

Conflict of interest

The authors declare that there is no conflict regarding the publication of this paper.

References

- [1] Simons, R.-J., Van der Linden, J., & Duffy, T. (2000). *New Learning: Three Ways to Learn in a New Balance*. New Learning, 1–20, Retrieved from the source on 9/9/2023 <https://link.springer.com/chapter>
- [2] Al-Youssef, Raghad & Darawsheh, Najwa .(2020). The Role of the Educational Supervisor in Developing the

Leadership Capabilities of Teachers Northern Jordan Valley Schools, *International Journal of Multidisciplinary Sciences and Advanced Technology* (8), 62–77

- [3] Tynjala, P. (2008). Perspectives into learning at the workplace, *Educational Research Review*, 3(2), 130–154. <http://www.sciencedirect.com/science/article/B7XNV-4RHP9FT-1/2/bf641ddeb4d25bb5af509150c6523717>
- [4] Friedman, L. W., Friedman, H. H., & Frankel, M. (2016). *A New Mode of Learning in Higher Education: The Partnership Hybrid Class*. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.2712763>
- [5] Al-Kilani, S. (2011). *Community service based on human rights: An-Najah National University's experience in social responsibility*, A working paper presented to the Palestinian Universities Social Responsibility Conference, Nablus.
- [6] Poderyt, A. (2020). University-organised summer schools as cases of hybrid education, *Journal of Education Culture and Society*, 11(2), 211–223. <https://doi.org/10.15503/jecs2020.2.211.223>
- [7] Azad, F., Williams, J., Minton, E., Sheridan, M., & Mandell, S. (2020). Partners in school: An example of care coordination to ensure consistency of evidence-based practices across home and school for youth with autism spectrum disorder (ASD), *Interprofessional Care Coordination for Pediatric Autism Spectrum Disorder: Translating Research into Practice*, 153–167. https://doi.org/10.1007/978-3-030-46295-6_11
- [8] Mapp, K., & Kuttner, P. (2013). *Partners in Education: A Dual Capacity-Building Framework for Family-School Partnerships*. Retrieved from the source on 8/22/2023. <https://sedl.org/pubs/framework>
- [9] Bloch, M., Lave, J., & Wenger, E. (1994). Situated Learning: Legitimate Peripheral Participation. *Man*, 29(2), 487. <https://doi.org/10.2307/2804509>
- [10] Goodyear, P. (2001). Effective Networked Learning in Higher Education: notes and guideline, *Networked Learning in Higher Education Project (JCALT)*, 3(Deliverable 9), 1–167. <http://csalt.lanccs.ac.uk/jisc/>
- [11] Kirschner, P. A. (2005). Learning in innovative learning environments, *Computers in Human Behavior*, 21(4), 547–554. <https://doi.org/10.1016/j.chb.2004.10.022>
- [12] Zitter, I., & Hoeve, A. (2012). *Hybrid Learning Environments*. OECD Education Working Papers, 81. <https://doi.org/10.1787/5k97785xwvdf-en>
- [13] Nguyen, T. (2015). The Effectiveness of Online Learning: Beyond No Significant Difference and Future Horizons, *MERLOT Journal of Online Learning and Teaching*, 11(2), 309–319.
- [14] Grushka-Cockayne, Y. (2020). *How to Design and Teach a Hybrid Course*. Harvard Business Publishing, 12, Retrieved from the source on 11/9/2023 <https://hbsp.harvard.edu/inspiring-minds/how-to-design-and-teach-a-hybrid-class>
- [15] Kamal, T., & Illiyan, A. (2021). School teachers' perception and challenges towards online teaching during COVID-19 pandemic in India: an econometric analysis. *Asian Association of Open Universities Journal*, 16(3), 311–325. <https://doi.org/10.1108/aaouj-10-2021-0122>
- [16] Almahasees, Z., Mohsen, K., & Amin, M. O. (2021). *Faculty's and Students' Perceptions of Online Learning During COVID-19*. *Frontiers in Education*, 6. <https://doi.org/10.3389/educ.2021.638470>
- [17] Yusnilita, N. (2020). The Impact of Online Learning: Student's Views, *ETERNAL (English Teaching Journal)*, 11(1). <https://doi.org/10.26877/eternal.v11i1.6069>
- [18] Sumanth. (2021). *Difficulties faced by teachers while shifting to online learning amid Covid-19 pandemic*. *India Today*. <https://www.indiatoday.in/education-today/featurephilia/story/difficulties-faced-by-teachers-while-shifting-to-online-learning-amid-covid-19-pandemic-1774722-2021-07-02>
- [19] Roshini. (2021). *84% of teachers facing challenges during online classes: Survey*. New Delhi.
- [20] Lawrence, K. C., & Fakuade, V. (2021). *Parental involvement, learning participation and online learning commitment of adolescent learners during the COVID-19 lockdown*. *Research in Learning Technology*, 29. <https://doi.org/10.25304/rlt.v29.2544>
- [21] Ramij, M., & Sultana, A. (2020). *Preparedness of Online Classes in Developing Countries amid COVID-19 Outbreak: A Perspective from Bangladesh*. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.3638718>
- [22] Sangeeta, & Tandon, U. (2021). Factors influencing adoption of online teaching by school teachers: A study during COVID-19 pandemic, *Journal of Public Affairs*, 21(4). <https://doi.org/10.1002/pa.2503>

- [23] Joshi, A., Vinay, M., & Bhaskar, P. (2020). Impact of coronavirus pandemic on the Indian education sector: perspectives of teachers on online teaching and assessments, *Interactive Technology and Smart Education*, 18(2), 205–226. <https://doi.org/10.1108/ITSE-06-2020-0087>
- [24] Sareen, S., & Nangia, A. (2020). Online Teaching during COVID 19: Attitude and Challenges faced by School Teachers, *International Journal of Disaster Recovery and Business Continuity*, 11(1), 3012–3018.
- [25] Tran, T., Hoang, A. D., Nguyen, Y. C., Nguyen, L. C., Ta, N. T., Pham, Q. H., Pham, C. X., Le, Q. A., Dinh, V. H., & Nguyen, T. (2020). Toward sustainable learning during school suspension: Socioeconomic, occupational aspirations, and learning behavior of vietnamese students during COVID-19. *Sustainability (Switzerland)*, 12(10). <https://doi.org/10.3390/su12104195>
- [26] Hasler-Waters, L., Menchaca, M. P., & Borup, J. (2014). Parental involvement in K-12 online and blended learning. *Handbook of Research on K-12 Online and Blended Learning*, 303–324. <http://press.etc.cmu.edu/content/handbook-research-k-12-online-and-blended-learning-0>
- [27] Lawrence, K. C., & Fakuade, O. V. (2021). Parental involvement, learning participation and online learning commitment of adolescent learners during the COVID-19 lockdown. *Research in Learning Technology*, 29. <https://doi.org/10.25304/rlt.v29.2544>
- [28] Dube, B. (2020). Rural online learning in the context of COVID 19 in South Africa: Evoking an inclusive education approach, *Multidisciplinary Journal of Educational Research*, 10(2), 135. <https://doi.org/10.17583/remie.2020.5607>
- [29] Sarmiento, T. S., Gomes, A., & Moreira, F. (2018). Classroom adaptations for blended learning practices. *ACM International Conference Proceeding Series*, 723–728. <https://doi.org/10.1145/3284179.3284296>
- [30] Xu, Z. (2008). When hybrid learning meets blended teaching: Online Computer-Mediated Communication (CMC) discourse and classroom face-to-face (FTF) discourse analysis. *Lecture Notes in Computer Science (Including Subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 5169 LNCS, 157–167. https://doi.org/10.1007/978-3-540-85170-7_14
- [31] Baird, D. (2014). *The Development of Procedures and Policies for Undergraduate Hybrid Courses: a Comparison Study. Issues In Information Systems*. https://doi.org/10.48009/2_iis_2014_441-449
- [32] Maspul, A., & Amalia, F. (2021). *The Role of Parents in the Implementation of Hybrid Learning Toward School Normalisation in Indonesia*, Academia Letters, September, <https://doi.org/10.20935/al3588>
- [33] Hair, J., Celsi, M., Money, A., & Samouel, P. (2007). *The essentials of Business Numeracy*. John Wiley & Sons.
- [34] Boonk, L., Gijsselaers, H. J. M., Ritzen, H., & Brand-Gruwel, S. (2018). A review of the relationship between parental involvement indicators and academic achievement. *Educational Research Review*, 24, 10–30. <https://doi.org/10.1016/j.edurev.2018.02.00>
- [35] Sindiani, A. M., Obeidat, N., Alshdaifat, E., Elsalem, L., Alwani, M. M., Rawashdeh, H., Fares, A. S., Alalawne, T., & Tawalbeh, L. I. (2020). Distance education during the COVID-19 outbreak: A cross-sectional study among medical students in North of Jordan, *Annals of Medicine and Surgery*, 59(October), 186–194. <https://doi.org/10.1016/j.amsu.2020.09.036>