Students' Language Sensory Patterns in Online Arabic Learning

DOI: https://doi.org/10.33806/ijaes.v25i2.869

Danial Hilmi and M. Abdul Hamid
Universitas Islam Negeri Maulana Malik Ibrahim Malang, Indonesia

Received: 9.8.2024 Accepted: 29.3.2025 Early Online Publication: 6.4.2025

Abstract: Contrary to the perception that online learning inhibits the brain's sensory patterns in mastering Arabic, this study reveals that it can foster motivation and enhance language skill development. It refutes the stigma that online learning has a negative impact, particularly during the COVID-19 pandemic in Indonesia. This research is significant as it demonstrates that the brain's sensory functions remain unaffected by online learning. This study aims to explore key components of the brain's sensory system, including motivation, learning comprehension, abstraction, and sensory sensitivity, in the context of online Arabic learning. Using a descriptive quantitative approach, data were collected through questionnaires distributed to new students engaged in online learning, supplemented by interviews with selected respondents. The findings indicate that students maintain high motivation, strong learning comprehension, effective abstraction, and high sensory sensitivity in online Arabic learning. These results suggest that online learning does not pose a substantial obstacle to Arabic mastery and may, in fact, positively contribute to optimal language acquisition.

Keywords: Arabic language, learning, online, sensory pattern

1. Introduction

Online Arabic learning does not significantly hinder the brain's sensory development in processing and exploring language skills. This is because sensory functions play a critical role in delivering verbal messages to the brain through receptive processes and re-exploring them through productive processes. However, online learning is often perceived as limited in its ability to fully engage sensory mechanisms, particularly in refining Arabic language skills. Traditional methods, such as habituation through real-world objects and direct experiences, are thought to be more effective in forming concepts aligned with Arabic learning objectives. Therefore, online Arabic learning must prioritize maintaining the brain's sensory engagement by ensuring that information is effectively acquired through oral and written channels. Additionally, it should reinforce learning through oral and written abstraction.

Traditional Arabic language teaching pattern, characterized by direct interaction between lecturers and students, offers a rhythmic sensory contribution by combining structural aspects. In contrast, online learning pattern provides a multi-sensory experience that integrates audio and visual elements, enabling students to absorb practical benefits optimally (Hilmi 2021). This pattern presents

a richer sensory pattern by creatively and effectively integrating technology into learning, ultimately enhancing student competence.

Theoretically, language learning involves the simultaneous engagement of all sensory modalities, as emphasized by Fernal and Gilingham (cited in Yusuf 2020: 78). They argued that a multi-sensory approach, which presents subject matter through various sensory channels—visual, auditory, kinesthetic, and tactile (VAKT)— enhances learning outcomes. This approach includes exploration activities (touching), listening, writing, and visual activities (observing) (Rostan 2020). Key to fulfilling these needs are motivation, comprehensive skills, abstraction, and sensory sensitivity, all of which influence the success of online Arabic learning. However, the shift to online media has resulted in the loss of certain sensory functions, such as kinesthetic and tactile engagement, fundamentally impacting the achievement of language learning competencies.

Arabic learning generally focuses on the brain's sensory processes utilizing auditory, visual, kinesthetic, and tactile learning modalities. These modalities are best supported by fostering motivation, comprehensive skills, abstraction, and sensory sensitivity. Multisensory learning requires real-world actions, such as creating a language-rich environment, continuous language practice, and the utilization of real objects to develop language skills. However, online Arabic learning often falls short in fully meeting these multisensory needs, leading to obstacles such as the absence of kinesthetic and tactile aspects that are typically present in offline learning.

Based on the perception that online Arabic learning may not achieve the desired learning competencies, this study aims to explore sensory patterns in online learning Arabic, focusing on students' motivation, comprehensive skills, abstraction, and sensory sensitivity. The assumption is that online Arabic learning may hinder the brain's sensory development in language acquisition, as certain multisensory elements are absent when learning is confined to a screen. This research seeks to illustrate whether online learning affects the brain's sensory patterns and to investigate the real conditions of learning Arabic in a fully online context.

2. Literature review

2.1 Learning process during COVID-19

The Coronavirus (SARS-CoV-2) was first identified in Wuhan, China, in December 2019 (Moulahoum 2020). Its rapid and widespread transmission has turned COVID-19 into a global health crisis (Loey 2021) and a pandemic affecting countries worldwide (Baig 2020; Lillard 2020; Wong et al. 2020; Ghosh et al. 2021). The pandemic has significantly affected various sectors, including education (Blankenberger and Williams 2020; Chen 2020; Pasani 2020), placing governments under enormous pressure to manage the increasingly complex crisis effectively (Angeli and Montefusco 2020: 1; Utomo 2020). For example, China, as the epicenter of the outbreak, implemented a series of decisive actions for prevention,

control, and treatment, including comprehensive education policies addressing governance structures, teaching methods, teacher management, and student management (Xue 2020: 3).

The COVID-19 pandemic forced many educational institutions to close their campuses (Hung 2020: 1), disrupting conventional teaching methods and necessitating a rapid shift to online learning. Students had to adapt to this new mode of learning activity in a short time (Chen 2020: 1; Syauqi 2020: 881). This transition highlighted the critical role of e-learning in supporting education during the pandemic (Alqahtani and Rajkhan 2020; Al-Balas 2020). Online platforms such as Zoom (zoomnow.net) and Blackboard (blackboard.com) enabled virtual classrooms, seminars, conferences, and presentations, expanding traditional learning environments into digital spaces(Ng and Or 2020: 2). For instance, medical and nursing schools worldwide adopted distance learning (DL) as an alternative to in-person instruction (Ahmed 2020: 1; Ng and Or 2020: 1). Online language learning, supported by internet-based technologies, has shown potential to enhance educational outcomes significantly (Harahap 2019). This is largely due to technology's ability to foster independent learning and develop language skills.

2.2 Arabic learning during COVID-19

Arabic is widely regarded as a complex language because of its intricate morphological variations (El Kah 2017). It has unique characteristics that distinguish it from other languages, such as its focus on the past, the frequent omission of subjects, and its implicit verb categorization, which often renders subjects abstract. Additionally, Arabic emphasizes certainty and utilizes a robust derivational process, with nearly every word containing rich derivative information (Ajami 2016). Arabic can be categorized into three main types. First, Classical Arabic, which is used in the Quran and features more complex grammar and vocabulary than modern Arabic. Second, Modern Standard Arabic, which is the official language of Arab countries and is used in education and media. Third, Colloquial Arabic, which is considered a simpler form of the language (Aljameel 2017). Given these complexities, learning Arabic requires careful consideration of its various aspects.

Arabic learning needs to focus on key elements such as syntactic abilities, oral skills, dialect proficiency, and fostering an open mindset toward different cultures and societies (Eldin 2015). However, the COVID-19 pandemic has drastically changed the Arabic language learning process, shifting from traditional classrooms instruction to distance learning. This transition has not only changed the spatial dynamics of learning but also introduced new methodologies, such as assigning tasks via Google Forms, conducting written assignments, administering online practical tests, memorizing vocabulary (*mufrodat*), listening to music related to lessons, creating videos, and submitting them to teachers (Zulaini 2020: 48). For example, *maharat alqira'ah* are now taught through e-learning platforms using methods like paper discussion, Q&A sessions, *qira'ah* text recitation, and recordings. Platforms such as WhatsApp, Zoom, YouTube, Instagram, and

Facebook have become essential tools for facilitating these activities while preventing the spread of COVID-19 (Ritonga 2020).

2.3 Student's competence (sensory) in Arabic learning

Competence refers tothe underlying characteristic that enables individuals to perform effectively in specific roles or situations (Purwati 2016: 46). In education, student competence encompasses the mastery of knowledge, skills, values, and attitudes reflected in their habits of thinking and acting. It is often categorized into basic, general, technical/operational, and professional competencies (Amalia and Suwatno 2016: 32). Additionally, student competence spans three educational domains: attitudes, knowledge, and skills (Patmawati 2020: 303). In language learning, student competence typically includes four language skills: listening (*istima'*), speaking (*kalam*), reading (*qira'ah*), and writing (*kitabah*) (Putri 2017: 13). Maintaining and enhancing students' motivation is crucial for encouraging them to develop these abilities (Nur 2018: 82).

Beyond these skills, social competence is also essential. This includes emotional and reflective indicators such as emotions, self-analysis, self-organization, self-motivation; and empathy the ability to listen, understand, and empathize with others (Parfilova and Karimova 2015:12; Andrian and Yul 2023: 372). Language development is influenced by learning habits, particularly in Arabic, which emphasizes honing language skills to form multisensory patterns. Brain connectivity plays a key role in shaping these habits through online learning, enabling optimal stimulation of abstraction and sensitivity (Field 2003: 84; Hamizul 2015). Effective multisensory learning in online education depends on teachers' ability to employ appropriate strategies and provide meaningful experiences, ensuring stability in developing language skills.

In Arabic learning, communicative competence is an essential additional skill. It refers to the ability to apply grammatical rules to form correct sentences and to understand the context of time, place, and subject. With communicative competence, individuals can effectively deliver and interpret a message or negotiate a meaning within specific interpersonal contexts (Muradi 2014: 33). Another critical competence in Arabic learning is intercultural competence, which focuses on cognitive, affective, and psychomotor aspects. This enable students to comprehensively understand Arabic linguistic elements and apply them appropriately based on the norms and practices of Arab society (Yusuf 2020: 95).

3. Method

3.1 Study participants and design

This research involved freshmen at Universitas Islam Negeri (UIN) Maulana Malik Ibrahim Malang, who were enrolled in a one-year intensive Arabic program. The program is managed autonomously by the Language Centre and runs from Monday to Friday, 14.00 to 17.00, with each session lasting 90 minutes. The curriculum uses a textbook developed by the institution, which has been widely adopted by Islamic

higher education institutions both domestically and internationally. To gather comprehensive data, the study included all freshmen enrolled in the program.

The researchers employed a quantitative approach, using a questionnaire to collect primary data on motivation, learning comprehension, abstraction, and sensory sensitivity. Secondary data included students' perceptions and arguments related to the questionnaire responses. The study's data source comprised 4,100 freshmen participating in the online Arabic learning program from their homes. The questionnaire, using Google Forms, was distributed to all students in the Arabic Intensive Program. Respondents were given one week (November 2-9, 2020) to complete the form, resulting in 489 responses.

3.2 Instruments: Procedures and validation

Data were collected using a combination of questionnaires and interviews. The questionnaire aimed to explore student's motivation, learning comprehension, abstraction, and sensory sensitivity. as well as their perceptions of these factors. The research instruments were developed based on references aligned with the study's objectives. Interviews were conducted to supplement the questionnaire data, The questionnaire was prepared using Google Forms and distributed to all students through class representatives, and the students were given one week to submit their responses.

After data collection, the researchers tabulated and classified the data based on the study's needs. Motivation, learning comprehension, abstraction, and sensory sensitivity were identified as key factors in achieving the research objectives. Following data tabulation and classification, the researchers analyzed the data, interpreted the findings, and drew conclusions based on the patterns and meanings identified in the analysis.

4. Results

4.1 Data analysis

The success of language learning depends on four key factors: motivation, learning comprehension, abstraction ability, and sensory sensitivity. Motivation is the most fundamental factor, as it stems from internal drive and is directly linked to a student's willingness and enthusiasm for learning. Learning comprehension and abstraction ability relate to an individual's capacity to receive, process, and apply information. Sensory sensitivity, on the other hand, refers to the ability to perceive and respond to stimuli used in the learning process. The transition from offline to online learning has also impacted competence achievement, as not all sensory modalities are fully engaged.

4.1.1 Online Arabic learning motivation

Learning motivation reflects the enthusiasm to achieve one's learning objectives. To assess motivation levels, the researchers surveyed 498 students from various faculties at UIN Malang participating in online Arabic learning. The students responded to 15 questions, and the results are summarized in Table 1.

Table 1. Online Arabic learning motivation

Level	Motivation	
	N	Percent
Excellent	17	3
High	292	59
Average	169	34
Low	19	4
Poor	-	-
Total	498	100

The findings reveal that 292 students (59 percent) exhibited high motivation, as evidenced by their consistent attendance, note-taking, proactive search for additional learning materials online, and timely completion of assignments. Meanwhile, 34 percent of students demonstrated average motivation, primarily engaging in the course to meet compulsory requirements, as Arabic is a mandatory subject at UIN Maulana Malik Ibrahim Malang.

Future orientation emerged as a significant driver or motivation. Among the 15 motivation-related questions, students rated "learning Arabic is beneficial" (4.59) and "learning Arabic is important" (4.50) the highest. As noted by a PKPBA student, Arabic is particularly valuable for religious enrichment, providing access to authentic source materials, especially for students in Islamic studies. This explains why they "feel worried when they receive low scores in Arabic" (4.21) and consistently "wants to achieve good results" (3.94). Another PKPBA student, stated, "I worry about getting low scores in Arabic because I am pursuing religious education, which motivates me to excel. Additionally, motivation increases when "lecturers use videos and other interactive media" (4.00), highlighting the correlation between motivation, future orientation, achievement, and teaching methods.

4.1.2 Arabic apprehension and abstraction ability

Apprehension refers to an individual's ability to grasp and process information using a structured framework. Abstraction, on the other hand, involves the ability to analyse information in ways suited to the environmental conditions. In Arabic learning, both apprehension and abstraction ability are crucial; they are related to a receptive and productive language skills. These skills enable students to interpret and express ideas, both orally and in writing. Apprehension in Arabic learning relates to the ability to receive and process oral (listening) and written (reading) information, then retell the information orally (speaking) and in writing (writing). These skills are integral to mastering Arabic. Effective information processing and expression, both oral and written, provide a conducive environment for student development in Arabic learning, as illustrated in Table 2.

Table 2. Arabic apprehension and abstraction ability

Level	Apprehension Ability		Abstraction	
	N	Percent	N	Percent
Excellent	31	6	26	5
High	173	35	134	27
Average	232	47	226	45
Low	55	11	102	21
Poor	7	1	10	2
Total	498	100	498	100

Overall, students at UIN Malang demonstrated strong abilities in Arabic learning. Only 12 percent faced challenges in understanding the material, and 23 percent struggled with abstract and conceptual thinking in Arabic learning. Table 2 indicates that apprehension of Arabic learning material was not a fundamental issue. The questionnaire revealed that 41 percent of students could understand the material when it was supported by concrete examples (score = 3.94), comprehend audio visual content (score = 3.85), interpret reading texts provided by lecturers (score = 3.55), and identify various idioms presented during lessons (score = 3.40). A student from the Faculty of Economics noted, "*I can understand Arabic material well, especially when I am asked to read a text and retell the content, even though I'm not specializing in Arabic studies*".

Similarly, 32 percent of students demonstrated strong abstraction abilities, enabling them to practice the language correctly. They reported no difficulty practicing conversational Arabic, and were able to engage in Arabic conversations despite learning exclusively online (score =3.54). Other strengths included retelling Arabic texts(score = 3.40), describing images orally in Arabic (score = 3.29), identifying key points in learning materials (3.27), and responding quickly and accurately to lecturers' questions during online learning sessions (3.25). Another PKPBA students shared, "*Gradually, I've been able to explore my ideas and express them fluently in Arabic*".

4.1.3 Sensory sensitivity in online Arabic learning

Sensory sensitivity refers the heightened responsiveness to stimuli that can affect the ability to receive and process information. In general, human brain's sensory functions during learning are influenced four primary factors: (1) sight, (2) hearing, (3) smell, and (4) taste and touch. In online Arabic learning, sensory sensitivity contributes to the achievement of learning objectives. While concerns have been raised about the potential negative effects of prolonged computer use on students' sensory functions, this study found no significant evidence to support such concerns. Students maintained their sensory sensitivity despite spending extended periods in front of computer.

Table 3. Sensory sensitivity

Level	Sensitivity	
	N	Percent
Highly Sensitive	15	3
Sensitive	85	17
In doubt	219	44
Less sensitive	126	25
Insensitive	53	11
Total	498	100

Sensitivity in this context, is measured by responsiveness to stimuli received by the eyes, the ears, and the environment. Prolonged computer use often raises concerns about eye strain, light sensitivity, reduced auditory perception due to frequent headphone use, and increased susceptibility to distractions. Additionally, there are worries about memory lapses caused by excessive screen time. However, the research reveals that 80 percent of students did not experience these issues, indicating that online Arabic learning has minimal impact on sensory sensitivity. Eye strain, for instance, was not a common problem among students. Overall, sensory sensitivity remained unaffected, with no significant fatigue or disruptions reported during the learning process.

5. Discussion

The shift to online learning for Arabic language learning has not negatively impacted motivation, apprehension, abstraction ability, or sensory sensitivity. Arabic learning in this mode incorporates audio and visual material, such as instructional videos, to enhance receptive skills and facilitate material comprehension. When combined with text-based learning, this approach aims to improve students' Arabic competence without compromising the observed aspects. The linguistic sensory patterns observed in online Arabic learning provide a positive learning experience, meeting students' needs effectively. For example, integrating music into the learning process can significantly enhance engagement and learning frequency as it supports right-brain functions and fulfill learning needs (Küçük' 2010; Al-Yasin and Hamdan 2023).

These findings indicate that online learning, particularly through the use of audio-visual media, effectively engages students and motivates them to seek additional online resources to improve their language skills. Likewise, apprehension and abstraction abilities remain unaffected by online language learning method. Additionally, student's sensory performance does not pose any significant challenges during online learning.

This study reveals that the shift from to online learning does not compromise the fundamental aspects of learning competency achievement. Students exhibit intrinsic motivation to learn Arabic, both receptively and productively, driven by their sensory sensitivity in processing and mastering communication skills, including speaking and writing. The receptive aspect significantly impacts

productivity; students who excel in understanding oral texts can enhance their productive abilities by practicing Arabic expressions in various situations. Concerns regarding potential decline in motivation, apprehension, abstraction ability, and sensory function due to online learning have not been substantiated. The design of learning materials, including the use of instructional videos, and the improved teaching capabilities of lecturers through online training have ensured that Arabic learning outcomes meet expected targets, even in a virtual environment.

The interaction of visual, auditory, reading, and kinesthetic (VARK) modalities in online learning illustrates its potential to improve sensory patterns and cognitive knowledge construction (Türker and Bostancı 2023). Online learning also provides students with experience in presenting the VARK learning style, facilitating sensory development and fostering language competence in both receptive and productive aspects.

However, the development of brain sensory functions in Arabic learning requires the consistent practice in expressing ideas through oral and written activities. Wilson (2013)stated multisensory language learning methods, such as role-playing, are essential for mastering the paralinguistic features of the target language. In online Arabic learning, role-playing activities are limited(Al-Sabbagh 2024),reducing opportunities habituation in language production. Additionally, the interaction between students and lecturers in online settings has its own challenges, as some sensory responses are difficult to display virtually. Despite these limitations, the study shows no significant negative impact on learning outcomes, suggesting that the shift to online learning is primarily instrumental rather than substantive.

Research on multisensory learning shows that intensive engagement in such activities positively correlates with the ability to practice and learn language skills. Schwed and Melichar (2008) stated that the use of multisensory has an impact on student participation, foster brain connectivity, and facilitate long-term knowledge retention. Similarly, Jasmine and Connolly (2015)emphasized that multisensory activities improve spelling accuracy and sustain learning motivation. However, this study shows that high multisensory intensity is not always necessary for achieving Arabic learning outcomes. Even with reduced sensory engagement in online learning, language competency could still be achieved.

Nevertheless, this study also reveals that the level of competence achieved through online learning often remains at the minimum threshold, meeting only the basic course requirements rather than reaching optimal mastery. This underscores the need for further improvements in online learning management to help students achieve higher level of Arabic proficiency. For this reason, efforts to improve learning design are necessary, including better course material organization, more structured course materials, more creative lecturers who are proficient in media technology, and learning infrastructure that supports independent student development. These improvements are feasible, as students are highly motivated to learn Arabic. In addition, it is necessary to consider a learning model that supports receptive and productive patterns and several patterns adjusting to the duration to reduce the impact of student sensory sensitivity.

6. Conclusion

The findings indicate that online Arabic learning during the COVID-19 pandemic did not negatively impact students' sensory functions or their ability to process and develop language skills. Motivation plays a critical role in fulfilling sensory needs to advancing language proficiency. Both receptive and productive patterns in Arabic learning remain viable in an online format, as evidenced by students' ability to describe images, comprehend listening exercises, and rephrase ideas effectively. Furthermore, online learning did not lead to sensory sensitivity issues such as eye strain, auditory disorders, light sensitivity, or forgetfulness. This challenges the negative perception of online learning, demonstrating that it does not hinder sensory functions or the optimization of Arabic learning.

Successful online Arabic learning requires careful attention to sensory needs, which are crucial for achieving desired learning outcomes. Building motivation through enjoyable learning experiences and emphasizing the importance of mastering Arabic are essential. Lecturers need not to worry about online learning process as long as they prepare effective learning media and strategies. Apprehension and abstraction, key determinants of sensory development, require consistent habituation in teaching and learning. When online learning meets these sensory needs, successful Arabic learning can be achieved.

This research was conducted during the odd semester of 2020, with adequate preparation in media, strategies, and management of online Arabic learning. However, the dynamics may differ in continuous online learning scenarios or in regular offline settings at Islamic higher education institutions. Therefore, further research is necessary to explore the optimization of continuous online learning and its potential to become a normalized learning process.

Danial Hilmi –Corresponding Author
Department of Arabic Language Education
Maulana Malik Ibrahim State Islamic University of Malang, Indonesia
ORCID Number: 0000-0002-1336-0190
hilmi@pba.uin-malang.ac.id

M. Abdul Hamid
Department of Arabic Language Education
Maulana Malik Ibrahim State Islamic University of Malang, Indonesia
ORCID Number:0000-0002-3560-925X
hamidabdul@uin-malang.ac.id

References

Ajami, Hassan. (2016). 'Arabic language, culture, and communication'. *International Journal of Linguistics and Communication*, 4(1): 120-123 https://doi.org/10.15640/ijlc.v4n1a12

Al-Balas, Mahmoud, Hasan I. al-Balas, Hatim M. Jaber, Khaled Obeidat, Hamzah Al-Balas, Emad A. Aborajooh, Raed Al-Taher and Bayan Al-Balas. (2020). 'Distance learning in clinical medical education amid COVID-19 pandemic in Jordan: Current situation, challenges, and perspectives'. *BMC Medical Education*, 20(341): 1-7. https://doi.org/10.1186/s12909-020-02257-4

Aljameel, Sumayh, James D. O'Shea, Keeley Crockett and Annabel Latham. (2017). 'Survey of string similarity approaches and the challenging faced by the Arabic language.' *Proceedings of 2016 11th International Conference on Computer Engineering and Systems, ICCES 201*. https://doi.org/10.1109/ICCES.2016.7822008

Alqahtani, Ammar Y., andAlbraa A. Rajkhan. (2020). 'E-learning critical success factors during the COVID-19 pandemic: A comprehensive analysis of e-learning managerial perspectives'. *Education Sciences*, 10(9): 216-224. https://doi.org/10.3390/educsci10090216

Al-Sabbagh, Rania. (2024). 'The negative transfer effect on the neural machine translation of Egyptian Arabic adjuncts into English: The case of Google translate'. *International Journal of Arabic-English Studies*, 24(1): 95–118. https://doi.org/10.33806/ijaes.v24i1.560

Amalia, Lia and Suwatno Suwatno. (2016). 'Peningkatan kompetensi siswa melalui efektivitas competency based training'.*Jurnal Pendidikan Manajemen Perkantoran*, 1(1): 30-37. https://doi.org/10.17509/jpm.v1i1.3267

Al-Yasin, Noor and Jihad M. Hamdan. (2023). 'The impact of music on verbal memory: Evidence from Jordanian university students.' *Psycholinguistics*, 34(1): 28-49. https://doi.org/10.31470/2309-1797-2023-34-1-28-49.

Andrian, Riko and Widiya Yul. (2023). 'Arabic teaching efficacy model (ATEM): A language teaching model design'. *International Journal of Arabic-English Studies*, 23(2): 369–384. https://doi.org/10.33806/ijaes.v23i2.468

Angeli, Federica and Andrea Montefusco. (2020). 'Sensemaking and learning during the COVID-19 pandemic: A complex adaptive systems perspective on policy decision-making'. *World Development*, 136(5): 37-45. https://doi.org/10.1016/j.worlddev.2020.105106

Baig, Abdul Mannan. (2020). 'Updates on What ACS Rreported: Emerging

evidences of COVID-19 with nervous system involvement.' *Chemical Neuroscience*, 11(9): 1204-1205. https://doi.org/10.1021/acschemneuro.0c00181

Blankenberger, Bob and Adam M. Williams. (2020). 'COVID and the impact on higher education: The essential role of integrity and accountability'. *Administrative Theory and Praxis*,1: 404-423. https://doi.org/10.1080/10841806.2020.1771907

Chen, Tinggui, Lijuan Peng, Bailu Jing, Chenyue Wu, Jianjun Yang and Guodong Cong. (2020). 'The impact of the COVID-19 pandemic on user experience with online education platforms in China'. *Sustainability*, 12(18): 1-31. https://doi.org/10.3390/SU12187329

El Kah, Anoual, Imad Zeroual and Abdel Hak Lakhouaja. (2017). 'Application of Arabic language processing in language learning.' *ACM International Conference Proceeding Series*. https://doi.org/10.1145/3090354.3090390

Eldin, Ahmad. (2015). 'Teaching culture in the classroom to Arabic language students'. *International Education Studie*s, 8(2): 113-120. https://doi.org/10.5539/ies.v8n2p113

Field, John. (2003). *Psycholinguistics: A Resource Book for Students*. New York: Routledge

Ghosh, Kalyan S. Abdul Amin, Shovanlal Gayen and Tarun Jha. (2021). 'Chemical-informatics approach to COVID-19 drug discovery: Exploration of important fragments and data mining based prediction of some hits from natural origins as main protease (Mpro) inhibitors'. *Journal of Molecular Structure*, 10: 10-16. https://doi.org/10.1016/j.molstruc.2020.129026

Hamizul, Muhammad and Nik Mohd Rahimi. (2015). 'Design and development of Arabic online games: A conceptual paper'. *Procedia - Social and Behavioral Sciences*, 174: 1428–1433. https://doi.org/10.1016/J.SBSPRO.2015.01.771

Harahap, Fauziyah, Nanda Eska Anugrah Nasution and Binari Manurung. (2019). 'The effect of blended learning on student's learning achievement and science process skills in plant tissue culture course'. *International Journal of Instruction*, 12(1): 521-538. https://doi.org/10.29333/iji.2019.12134a

Hilmi, Danial. (2021). 'Impact of Arabic online learning inthe perspective of how the brain learns'. *Ijaz Arabi: Journal of Arabic Learning*, 4(1): 59-73.https://doi.org/10.18860/ijazarabi.v4i1.10442

Hung, Man, Frank W. Licari, Eric S. Hon, Evelyn Lauren, Sharon Su, Wendy

C. Birmingham, Lory L. Wadsworth, Jane H. Lassetter, Tyler C. Graff, William Harman, William B. Carroll and Martin S. Lipsky. (2020). 'In an era of uncertainty: Impact of COVID-19 on dental education'. *Journal of Dental Education*. 85(2): 148-156. https://doi.org/10.1002/jdd.12404

Jasmine, Joanne and Megan Connolly. (2015). 'The use of multisensory approaches during center time, through visual, auditory, and kinesthetic-tactile Activities, to enhance spelling accuracy of second grade students'.*Journal of Education and Social Policy*, 2(1): 12-19. https://doi.org/10.30845/jesp

Küçük, Duygu P., and Mehmet Durak. (2020). 'Exam anxiety: A view from the piano education process of music pre-service teachers'. *Journal of Academic Social Sciences*, 109: 200-221.

Lillard, Dean. (2020). 'A Cross-national design to estimate effects of COVID-induced non-pharmacological interventions'. *Survey Research Methods*, 14(2): 211-216. https://doi.org/10.18148/srm/2020.v14i2.7766

Loey, Mohamed, Gunasekaran Manogaran, Mohamed N. Hamed andNoer Eldeen M. Khalifa. (2021). 'A hybrid deep transfer learning model with machine learning methods for face mask detection in the era of the COVID-19 pandemic'. *Measurement: Journal of the International MeasurementConfederation*, 66: 753-760. https://doi.org/10.1016/j.measurement.2020.108288

Moulahoum, Hichem, Faezeh Ghorbanizamani, Figen Zihnioglu, Kutsal Turhan and Suna Timur. (2020). 'How should diagnostic kits development Adapt Quickly in COVID 19-like Pandemic Models? Pros and Cons of Sensory platforms used in COVID-19 sensing'. *Talanta*, 222: 121-136. https://doi.org/https://doi.org/10.1016/j.talanta.2020.121534

Muradi, Ahmad. (2014). 'Pendekatan komunikatif dalam pembelajaran Bahasa Arab'. *Arabiyat: Jurnal Pendidikan Bahasa Arab Dan Kebahasaaraban*. 1(1): 29-48. https://doi.org/10.15408/a.v1i1.1129

Ng, Yuet-Ming and Peggy P.L. Or. (2020). 'Coronavirus disease (COVID-19) prevention: Virtual classroom education for hand hygiene'. *Nurse Education in Practice*, 45: 102-112. https://doi.org/10.1016/j.nepr.2020.102782

Nur, Taufik. (2018). 'Upaya peningkatan pembelajaran Bahasa Arab dengan penerapan manajemen berbasis sekolah (MBS)'. Jurnal *Shaut Al Arabiyyah*, 6(1): 68-84. https://doi.org/10.24252/saa.v6i1.5711

Parfilova, Gulfiya G., and Lilia Sh. Karimova. (2015). 'Study of university students:Social competence development.' *Review of European Studies*, 7(5): 10–16. https://doi.org/10.5539/res.v7n5p10

Pasani, Chairil F., Rizky Amelia and Zainudin Hassan. (2020). 'COVID-19 impact in Indonesia's education sector: Challenges and strategy.' *Journal*

of Advanced Research in Dynamical and Control Systems,12(7): 1722-1731. https://doi.org/10.5373/JARDCS/V12SP7/20202281

Patmawati, Nurhayati and Ade Y. Latjuba. (2020). 'Internalisasi aplikasi mind map pada media pembelajaran guru untuk meningkatkan kompetensi'. *Jurnal Ilmu Budaya*, 8(2): 302–312. https://doi.org/10.34050/jib.v8i2.11089

Purwati, Purwati. (2016). 'Peningkatan kompetensi dan hasil belajar bahasa Indonesia materi teks percakapan melalui metode pqrst siswa kelas VI SDN ngastorejo.' *Jurnal Ilmiah "Pendidikan Dasar",* 3(1): 43–52. https://doi.org/10.30659/pendas.3.1.43-52

Putri, Wakhidati N. (2017). 'Pengaruh media pembelajaran terhadap motivasi belajar bahasa Arab siswa madrasah tsanawiyah'. *LISANIA: Journal of Arabic Education and Literature,* 1(1): 1-16. https://doi.org/10.18326/lisania.v1i1.1160

Ritonga, Apri W., Mahyudin Ritonga, Talqis Nurdianto, Martin Kustati, Rehani Rehani,Ahamd Lahmi, Yasmadi Yasmadi and Pahri Pahri. (2020). 'E-learning process of maharah qira'ah in higher education during the COVID-19 pandemic.'*International Journal of Higher Education*, 9(6): 227-235. https://doi.org/10.5430/ijhe.v9n6p227

Rostan, Nurul N. A., Hazhari Ismail and Anis N. M. Jaafar. (2020). 'The use of multisensory technique in the teaching open syllables reading skill for preschoolers from a teacher's perspective'. *Southeast Asia Early Childhood Journal,* 9(2): 155-165. https://doi.org/10.37134/saecj.vol9.no2.11.2020

Schwed, Amy J. and Janice Melichar-Utter. (2008). *Brain-Friendly Study Strategies: How Teachers Can Help Students Learn*. California: Corwin Press, Inc.

Syauqi, Khusni, Sudji Munadi and Mochamad B. Triyono. (2020). 'Students' perceptions toward vocational education on online learning during the COVID-19 pandemic'. *International Journal of Evaluation and Research in Education,* 9(4): 881–886. https://doi.org/10.11591/ijere.v9i4.20766

Türker, Üstün and Özgür Bostancı. (2023). 'Learning styles of talented pre-service teachers'. *Problems of Education in the 21st Century,* 81(1): 144-164. https://doi.org/10.33225/pec/23.81.144

Utomo, Muhammad N. Y., Memet Sudaryanto and Kundharu Saddhono. (2020). 'Tools and strategy for distance learning to respond COVID-19pandemic in Indonesia'. *Ingenierie Des Systemes d'Information*, 1: 383-390. https://doi.org/10.18280/isi.250314

Wilson, Rosemary. (2013). 'Another language is another soul'. *Language and Intercultural Communication,* 13(3): 298-309. https://doi.org/10.1080/14708477.2013.804534

Wong, Molly D., Theresa Thai, Yuhua Li and Hong Liu. (2020). 'The role of chest computed tomography in the management of COVID-19: A review

of results and recommendations'. *Experimental Biology and Medicine*, 245(13): 1096-1103. https://doi.org/10.1177/1535370220938315

Xue, Eryong, Jian Li, Tingzhou Li and Weiwei Shang. (2020). 'How China's education responses to COVID-19: A perspective of policy analysis'. *Educational Philosophy and Theory*, 51(1): 1-13. https://doi.org/10.1080/00131857.2020.1793653

Yusuf, Muhammad. (2020). 'Kompetensi interkultural pengajaran bahasa Arab sebagai bahasa asing pada jenjang madrasah aliyah'. *Al Mahāra: Jurnal Pendidikan Bahasa Arab*, 6(1): 77-98. https://doi.org/10.14421/almahara.2020.061.05

Zulaini, Nabilla N., Nuril Mufidah, Nur Kholis and Muhammad A. Amrulloh. (2020). 'Learning Arabic for elementary schools during the COVID-19outbreak / pembelajaran bahasa Arab untuk madrasah ibtidaiyah pada masa wabah COVID-19'. *Journal AL-MUDARRIS*, 3(1): 39-55. https://doi.org/10.32478/al-mudarris.v3i1.384

Appendix

Profile of the participants

Student	Gender	Faculty
1	Male	Tarbiya
2	Female	Tarbiya
3	Female	Tarbiya
4	Female	Tarbiya
5	Female	Tarbiya
6	Female	Tarbiya
7	Female	Tarbiya
8	Female	Tarbiya
9	Male	Tarbiya
10	Female	Tarbiya
11	Male	Tarbiya
12	Male	Tarbiya
13-123	M / F	Tarbiya
124	Male	Sharia
125	Male	Sharia
126	Female	Sharia
127	Male	Sharia
128	Male	Sharia
129	Female	Sharia
130	Female	Sharia
131	Female	Sharia
132	Male	Sharia
133	Male	Sharia
134	Female	Sharia
135	Male	Sharia
136-190	M / F	Sharia
191	Female	Humanity
192	Female	Humanity
193	Male	Humanity
194	Female	Humanity
195	Male	Humanity
196	Female	Humanity
197	Male	Humanity
198	Male	Humanity
199	Female	Humanity
200	Female	Humanity
201	Female	Humanity
202-240	M / F	Humanity

Student	Gender	Faculty
241	Female	Psychology
242	Female	Psychology
243	Male	Psychology
244	Male	Psychology
245	Female	Psychology
246	Female	Psychology
247	Male	Psychology
248	Female	Psychology
249	Female	Psychology
250	Female	Psychology
251 -274	M / F	Psychology
275	Male	Economic
276	Male	Economic
277	Male	Economic
278	Female	Economic
279	Female	Economic
280	Male	Economic
281	Male	Economic
282	Female	Economic
283	Female	Economic
284	Female	Economic
285	Male	Economic
286	Female	Economic
287-439	M / F	Economic
440	Female	Science
441	Female	Science
442	Male	Science
443	Female	Science
444	Male	Science
445	Male	Science
446	Male	Science
447	Male	Science
448	Male	Science
449	Female	Science
450	Female	Science
451	Female	Science
452	Female	Science
453-497	M / F	Science