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## **Online Higher Education: The Importance of Students' Epistemological Beliefs, Well-Being, and Fun**

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### **Abstract**

The global pandemic has accelerated the ‘move online’ of higher education in Indonesia. This study aimed to examine the relationship between Indonesian students’ experiences of studying online, their epistemological beliefs and their beliefs about fun in learning. A mixed method approach was used to examine this relationship in a sample of 774 students. A Principal component analysis (PCA) of questionnaire responses identified associations between social constructivist beliefs about learning and the centrality of fun in learning. The PCA was considered together with a thematic analysis of an open question ‘Has the COVID-19 situation changed your feelings about online study?’ This revealed the significance of the epistemic mismatch between many students’ beliefs and the transmissive online pedagogy that they described. This mismatch is implicated as a factor in understanding the students largely negative experiences of online study and the impact on their well-being, albeit within the context of a pandemic. This is the first time that this link has been proposed. The research indicates that examining students’ epistemological beliefs can offer insights that are helpful in understanding students’ educational engagement and well-being when studying online.

*Keywords:* epistemological beliefs, fun, Indonesia, online higher education, well-being

Whilst many universities have previously sought to develop their online teaching provision, the global pandemic has accelerated this process with some choosing, and others being instructed by governments, to ‘go online’ (Havergal, 2020; Mishra, Gupta, & Shree, 2020). In the Republic of Indonesia, The Ministry of Education and Culture asked tertiary educators to provide ‘meaningful’ online learning experiences for their students (Hidayati & Saputra, 2020). This has been attempted in 80% of institutions, where the majority of students have left campus and returned to their home locations (Nugroho, 2020). These students are drawn from a population of over 270 million across Indonesia’s unique geographical and cultural context. Indonesia is the ‘most diverse multi-ethnic state in the world... [and] the world’s largest archipelagic country of more than 17,524 islands” (Direktorat Pembinaan Sekolah 2008). Given this scale and locational diversity it is not unexpected that one can find situations where Higher Education (H.E.) learning systems and infrastructures can be lacking or inadequate (Hidayati & Saputra, 2020). It is against this backdrop that many of Indonesia’s eight million H.E. students (Harun, Wardhaningtyas, Khan, An, & Masdar, 2020) are experiencing distance education for the first time (Churiyah, Sholikhah, Filianti, & Sakdiyyah, 2020).

The pandemic notwithstanding, any students who receive their education online at distance are at greatly increased risk of drop out and disengagement from their studies (Meneses & Marlon, 2020) and this creates a significant issue for educators (Aydin, Öztürk, Büyükköse, Er, & Sönmez, 2019). Therefore, as more students are placed, perhaps unexpectedly, in online learning situations it is increasingly important for educators to understand the factors that influence their students’ likelihood of success. Previous research has identified two key factors that are relatively underexplored in distance education: students’ epistemological beliefs and their beliefs about fun in learning (Okada & Sheehy, 2020a).

### **Students’ Epistemological Beliefs**

Students epistemological beliefs reflect their conceptions of knowledge and how it is acquired (Marlene Schommer-Aikins, Unruh, & Morphew, 2015). These beliefs might include the extent to which learning occurs through information transmission (OECD, 2009) or issues such as notions of ability, the extent to which it is innate or develops through education (Schommer-Aikins & Hutter, 2002). One way of framing epistemological beliefs is to draw distinctions that reflect models of pedagogy and learning, for example traditional or constructivist beliefs (OECD, 2009), or social constructivist beliefs (Sheehy, Budiyo, Kaye, & Rofiah, 2019). In this framing, students who hold traditional beliefs view the process of learning primarily as a simple transfer of knowledge from the teacher (Otting, Zwaal, Tempelaar, & Gijssels, 2010). This contrasts with a constructivist perspective that foregrounds the importance of autonomous activities facilitated by a teacher (Markic & Eilks, 2013). The social constructivist perspective, drawing on the work of Vygotsky (Vygotsky, 1967), frames learning as an interactive social process mediated by language and other cultural tools ( Okada & Sheehy, 2020a)

The importance of epistemological beliefs in higher education students’ experience has been researched for over 50 years, and evidence indicates a significant association between the beliefs students hold and their subsequent academic performance (Richardson, 2013a; Rodriguez & Cano, 2007). For example students who hold beliefs that they can develop their abilities and actively construct knowledge appear to adopt more effective study strategies (Hao, Barnes, Branch, & Wright, 2017), with consequently better outcomes (Çevik, 2015). However, there is an absence of such work in the context of distance education (Richardson 2013), an absence which has become more noticeable given a global turn towards online provision.

Within Indonesian ‘traditional’ Higher Education there is a growing body of research regarding teachers and student teachers epistemological beliefs (Sheehy, Budiyanto, Kaye, & Rofiah, 2017), and research with college students (Aditomo, 2018) that indicates the impact of these beliefs on outcomes in different study areas. There is also some acknowledgement of its importance within English as a Foreign Language [EFL] education (Wulandari Tasik, 2020), on determining their online learning strategies (Rahmiati, 2019). However, overall, there is notable lack of research in Indonesian higher education regarding epistemological beliefs and online education.

### **The Notion of Fun in Learning in Higher Education**

It has been argued that, in order to facilitate students’ success, it is important to examine factors that influence students’ engagement with their studies (Sharp, Zhu, Matos, & Sharp, 2021). Perhaps not unexpectedly, there is evidence of a significant correlation between the level of satisfaction that students report with their online learning experiences and their engagement with and completion of studies (Martin & Bolliger, 2018). Enjoyment positively influences student engagement (Bond, Buntins, Bedenlier, Zawacki-Richter, & Kerres, 2020; Groccia, 2018) and therefore it is logical to see the understanding and facilitation of enjoyment as a way of improving engagement and student success. One effect of enjoyment is an increased intrinsic motivation to study (Sharma, 2021), and an experience of having fun in learning promotes greater engagement and ability to cope with study demands (Reeve, Cheon, & Jang, 2020).

However, the notion of “fun” in higher education pedagogy is controversial. This is partly because whilst it can be defined as an emotion in relation to motivation and engagement (Reeve et al., 2020), its exact nature and meaning is unclear (Tisza & Markopoulos, 2021). Consequently, there is no consensus about its value for learning within higher education and there exists

...an ongoing debate about whether it [*fun*] is appropriate in relation to adult learning, and many believe that it is unsuitable in the “serious” business of Higher Education. (Whitton & Langan, 2019, p. 3)

This perception of “unsuitability” may contribute to the lack of research into the value of fun within online H.E. education (Okada & Sheehy, 2020a). This debate can be discerned within the handful of relevant Indonesian studies that exist. For example whilst one study concluded that a positive or good mood would interfere with H.E. students’ learning and motivation (Febrilia & Warokka, 2011), another concluded that fun helped to ensure academic motivation (Triyanto, 2019). In the context of EFL, fun was associated with positive learning experiences, and it was recommended that educators designed fun into their teaching (Tunnisa, Mahmud, & Salija, 2019). However, none of these studies considered the epistemological beliefs of the students, or the relationship between these beliefs and beliefs about fun in learning (Okada & Sheehy, 2020a). This study seeks to address this gap within H.E. research.

### **Research Context**

The context for this research was the Universitas Negeri Surabaya (UNESA), East Java Indonesia. UNESA has approximately 39, 000 students, across seven undergraduate faculties and graduate school. Starting in 2016 UNESA began to develop its own online learning platform, Vi-learn UNESA, to support a blended learning model (Kristanto, Mustaji, & Mariono, 2017). Initially this form of provision was available for education and psychology courses, and by 2019 it had expanded to 100 courses across varied disciplines for around 5000 students. Alongside this, Kemenristekdikti (Ministry of Research Technology and Higher

Education) supports a national online education initiative SPADA (Sistem Pembelajaran Daring-Online Learning System), and individual lecturers may adopt these or other learning management systems (Wintarti, Masriyah, Ekawati, & Fiangga, 2019). In response to the international pandemic the Rector of UNESA enacted a regulation that all learning activities should move online (Sabtiawan et al., 2020). Consequently, the number of courses available in Vi-learn UNESA increased to approximately 150 courses undertaken by 7000 students.

This study sought to explore the relationship between epistemological beliefs and fun in learning for students studying at UNESA, in the context of the move online necessitated by the global pandemic.

### **Method**

The use of questionnaires to collect data is an established approach within epistemological beliefs research (Schommer & Walker, 1995). A questionnaire was developed drawing on Indonesian epistemological research (Sheehy et al., 2017) that had been developed for use within an international H.E. context (Okada and Sheehy 2020a). The items are given in Appendix 1.

Items 1-4 collect demographic data: occupation, year and level of study, province.

Item 5 asks if the student is registered as disabled. This was added as the experience of disabled students within distance education has been highlighted as a significant issue (Spirina, Grabowska, & Liakh, 2020). There are over 4500 higher education institutions across the nation, yet only approximately five universities explicitly support access and enrol disabled students (Dzulfikar, 2019). UNESA is one of these few and has a disability support service to enable this, the Centre for Disability Studies and Services (Pusat Studi dan Layanan Disabilitas-PSLD).

Statements 6-9, 22-24 reflect models of learning (Social Constructivist, and Banking) and are taken from Okada and Sheehy (2020).

Statements 14-18, 10–12 relate to Constructivist and Traditional views of learning, from the OECD international survey (Organisation for Economic Co-operation and Development, 2010, 2013).

Statement 13 reflects the importance of beliefs concerning effort in learning in “non-western” epistemological research (Lee, Zhang, Song, & Huang, 2013).

Statements 25- 29 elicit beliefs about fun and happiness that emerged as stable items from Budiyanto et al.’s (2017) epistemological research.

Item 30 asks if the student enjoys studying online.

Item 31 asks if their feelings about online study have changed because of the COVID-19 pandemic. This item could be helpful in differentiating this cohort’s responses from subsequent research (Unger & Meiran, 2020).

This questionnaire therefore contains items that assess students’ epistemological beliefs, their notion of fun, and their experiences of studying online.

A preliminary discussion of the quantitative items and a tentative descriptive analysis occurred at the London School of Management Education international research conference 2021.

### Ethics

Ethics review was conducted by the Human Research Ethics committees of the researchers' universities and favourable opinions were obtained for proceeding. Study information was posted on UNESA's official Telegram community in an education space. Students could then choose to respond, or not, to the anonymous questionnaire hosted on Qualtrics™.

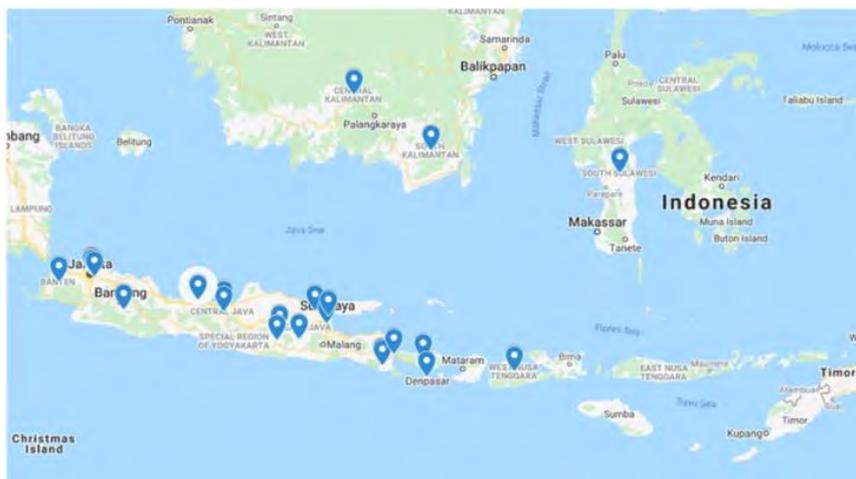
### Findings

Responses were obtained from 774 students from across Indonesia.

**Participants' locations and academic backgrounds.** The locations of participants ranged across the Javan provinces, Kalimantan, South Sulawesi and the lesser Sunda Islands (see Figure 1).

### Figure 1

*Geographical Location of Participants* [Map data ©2021 Google, INEGI]



This illustrates the potential reach of online education across Indonesia. The majority of participants (92.5%) came from an education and/or psychology discipline. Most (71%) were students in their 1st or 2nd year of study. All attended UNESA and 17 (2.2%) were registered as disabled students. To put this latter figure in perspective, UK universities report on average that 6.6% of their students are categorised as disabled (Williams, Pollard, Takala, & Houghton, 2019).

### *Response Analysis of Students' Epistemological Beliefs*

The data were reviewed with respect to carrying out a principal component analysis (PCA). A Kaiser–Meyer–Olkin score of 0.911 was obtained, suggesting that factors could be extracted (Navarro Sada & Maldonado, 2007), and this was supported by Bartlett's test of sphericity ( $p < 0.001$ ). A data scree plot suggested that 5 components could be extracted, and this was confirmed by considering the total variance explained. These 5 components, all with eigenvalues greater than 1, explained 52.66% of the variance in responses giving a moderate amount of explanatory power (Navarro Sada & Maldonado, 2007) typical in social science research (Taherdoost, Sahibuddin, & Jalaliyoon, 2014). The relative correlations between the

potential components were examined to select the type of data rotation (Dean, 2009) and a direct Oblimin rotation was chosen, with a cut off at 0.35 (see Table 1).

**Table 1**  
*Pattern Matrix*

	1	2	3	4	5
Helping students to talk to one another productively is a good way of teaching.	.715				
Learning can be defined as the social production of knowledge	.703				
Meaningful learning occurs when students are engaged in social activities with society	.669				
Students learn best through collaborative activities.	.634				
Teaching should be built around problems with clear, correct answers.	.532				
Effective/good teachers demonstrate the correct way to solve a problem	.449				
Students who begin university with “average” ability remain “average” throughout their studies		.771			
Students’ educational potential is fixed at birth.		.725			
All students should be taught in homogenous classes according to their intelligence.		.717			

I believe there should be a single teaching method applicable to all learning situations.		.602			
Learning should involve fun			.892		
To learn effectively students must be happy			.873		
Students and teachers should participate in learning from diversity together			.680		
Fun activities can get in the way of student learning			.735		
Fun is part of curiosity and discovery			.438	-.409	
Students learn best by finding solutions to problems on their own.				-.741	
I do not enjoy studying online					.800
Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved.				.688	
The teacher's role is to facilitate students' own inquiry.				.570	
Thinking and reasoning				-.514	.354

processes are more important than specific curriculum content.					
Learning occurs when students reflect on their action in a diverse world				-.470	
How much students get from their learning depends mostly on their effort.				-.449	

Extraction method: Principal Component Analysis

Rotation method: Oblimin with Kaiser normalisation

**Component 1. *Social constructivist and traditional pedagogies together.*** This component was formed from items related to social constructivist beliefs about teaching and learning. This view highlights the social production of knowledge, the importance of “talk”, and collaborative learning. These associations have been identified in European research (Alexandra Okada & Sheehy, 2020b). However, in this Indonesian sample these beliefs are also associated with, and not clearly differentiated from, teacher-led demonstrations of how to solve problems, and the value of having problems with clear correct answers, which have been seen as representing traditional pedagogy (Organisation for Economic Co-operation and Development (OCED), 2013).

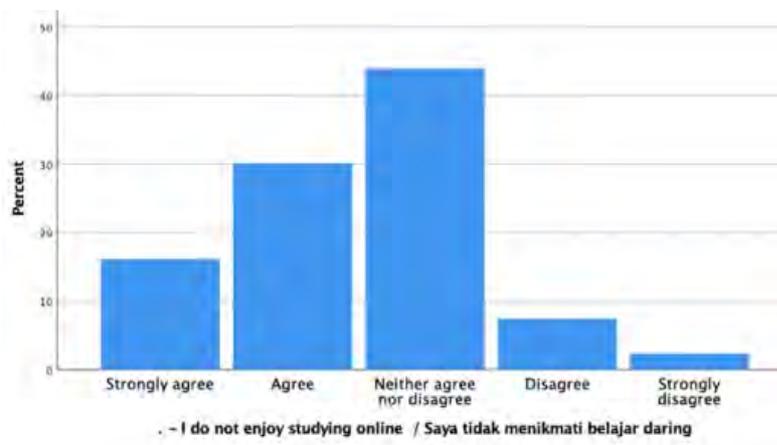
**Component 2. *Streamed by fixed abilities.*** This component contains beliefs that a person’s abilities are innate and fixed, and that students should be taught in homogenous, that is, “streamed” groups always using a single teaching method.

**Component 3. *Inclusive, collaborative fun for happy learners.*** Here happiness and enjoyment are believed to be pre-requisite for effective learning. This occurs through the collaborative learning of teachers and students in the context of diversity, and should involve fun. However, this is tempered by a belief that not all fun activities can support learning.

**Component 4. *Discovery is not fun, and reflection is unnecessary.*** This component holds beliefs that seem opposed to constructivist teaching approaches, in which teachers facilitate students thinking about and solving problems. In line with this are beliefs that discovery learning is not fun (in contrast to Component 3) and sees the learner as relatively passive.

**Component 5. *Online content delivery is not enjoyable teaching.*** Two items are grouped here, a belief that thinking and reasoning are more important than specific content, and not enjoying studying online. The component title here is tentative, suggesting that this lack of enjoyment is associated with online teaching that prioritizes content delivery-and that this has been their experience. As Figure 3 illustrates 46% of the sampled students did not enjoy studying online.

**Figure 2**  
 Responses to Item “I Do Not Enjoy Studying Online”



This lack of enjoyment was reflected across different subject disciplines and the disabled student’s group.

The disabled students’ responses to the “enjoyment” question differed significantly from their peers (independent samples Mann Whitney U,  $p < 0.001$ ), with 14/17 (i.e. 82%) responding as not enjoying, and 3 neither agreeing or disagreeing. In this respect they were more “extreme” than their non-disabled peers.

### **Thematic Analysis of Students’ Experiences of Studying Online**

Insights into students experience of studying online during the pandemic were suggested by their responses to the open question “Has the COVID-19 situation changed your feelings about online study?”. Participants’ responses were analysed thematically with coding being carried out by hand (i.e. no software package was used) derived from the steps proposed by Braun and Clarke (Braun & Clarke, 2006; Odendaal, Hattingh, & Eybers, 2019). The responses were interrogated repeatedly to code and construct themes (Langdridge, 2004). This allowed the identification of four themes that appeared as important in the data (Fereday & Muir-Cochrane, 2006). Each is described in turn and illustrated with exemplar comments.

### **Online Study becomes Boring and Students Become Demotivated**

Even students who initially enjoyed studying online could become bored. For example:

*I used to feel that studying online was fun. However, learning is getting more and more boring and unpleasant.*

*Yes, because learning **becomes** [our emphasis] very boring.*

Several factors contributed to this situation. These were barriers that impeded social interactions, reducing conversation with lecturers, and hindering social interactions with friends. Learning became less fun.

*Yes. Because online learning makes me feel bored and it is more difficult to discuss talking with and from the lecturer. It’s more fun if learning to rub [engage face to face] with friends.*

This change of experience appeared to be associated with students becoming “lazy” that is, demotivated or tired, which was repeatedly mentioned. This could be seen partly because of the physical demands of increased screen-time.

*Changes have also occurred in my enthusiasm level, I used to be offline, I was very enthusiastic when meeting friends and lecturers to study but now sometimes I am lazy because I stare at my cellphone for a long time so it can cause sleepiness and hot eyes.*

*The thing that makes me feel uncomfortable is when I have to stare at the screen of my cellphone / laptop for a long time, it makes my eyes dry and I get tired quickly.*

Students who found themselves “not feeling like doing” and demotivated also cited the role of technological barriers, and the importance of accessing a stable network signal.

*Yes, from those who used to be accustomed to face-to-face learning, they now have to go online. where the main internet connection is most important for online learning.*

*Yes, because sometimes feelings easily change [from happy to demotivated] when suddenly there is an internet network disruption.*

There are also costs of associated with accessing information, which has changed some students study experiences.

*Initially I was excited about the online learning process because it can improve concentration, but it has become increasingly uncomfortable with online learning because it requires a lot of internet quota while finances have decreased since COVID-19.*

*Learning online is wasteful in spending [money] to buy internet quotas.*

The home situation itself [outside of cost and signal issues] could have a negative impact.

*There is also a feeling of boredom with the atmosphere of studying at home which causes you to feel unfocused during lectures.*

*I lost enthusiasm and motivation to learn. Because the condition of the house is not supportive.*

What this theme suggests is that the “move online” has had a significant impact on some students’ study experience. The changes have resulted in many becoming bored and demotivated with their studies, a situation that is exacerbated by technology related barriers and home conditions. However, for a minority the changes were perceived positively.

### **A Qualified Success for Some**

A few students explicitly reported that the move online had positive consequences for them. Some valued the flexibility that the new approach offered.

*Online learning only started during COVID and I just enjoyed it because in some ways it became more flexible and less rigid.*

*Yes, we can follow the learning flexibly*

Others enjoyed being able to use technologies.

*Yes, because I don't think online learning is too boring and we take full advantage of technology.*

The role of moving online in tackling the pandemic, and as part of supporting their community, was also mentioned.

*Yes, I feel more positive lately, I think it's because through this pandemic we have to be healthier, have more understanding of various things, respect each other and also take care of each other.*

More typically however, these indications of positive consequences were qualified, and juxtaposed with the less positive factors.

*Yes. I like to be able to study at home close to my family, but on the one hand I am tired because I have to study extra in places where it is difficult.*

### **A Decline in Mental Well-Being**

The third theme highlights the impact that the move online was having on mental well-being. This was sometimes linked to factors indicated in the previous themes but was pervasive enough in the coding to emerge as a distinct theme.

Many students had experienced increased stress levels.

*It's not just that online learning is not as effective as face-to-face learning ... emotions tend to be unstable, increased stress levels, dizziness and tired eyes.*

And feelings of anxiety:

*I became less confident and often felt [feel] anxious.*

*Yes, anxiety increases because of the difficulties that exist.*

*My feelings when studying online are sometimes anxious and angry when I can't join the zoom meeting because of the unsupportive signal.*

The impact over time of these changes could be significant.

*Yes, studying online is quite physically and psychologically draining.*

*Feel burnout at home, I can't manage my rest time.*

This change could impact on students' general mood to differing degrees. For some this was a temporary dip.

*Yes, because studying online, sometimes there are network constraints that can cause a person's mood to go down.*

In other cases, a low mood had become associated with studying.

*Studying online is boring so when studying I feel a little depressed and bored.*

*There is a change in mood for studying.*

There were also more profound changes.

*“It really changed me. [our emphasis] Even though the beginning of the pandemic, I really used it to read a lot and think about and find out things that had not previously been crossed. However, over time all of this actually made me depressed because I could not learn directly and rarely interacted with it, reducing my sensitivity and critical power.*

*Absolutely because it makes me feel like uncomfortable, low esteem instead.*

### **A Less Social Pedagogy Isolates Students**

The move online had interfered with the social interactions that students valued within their teaching.

*... what has changed is the interaction with lecturers and friends, which is now very limited, in the past it was very easy to ask questions that [I] did not understand and look for sources of information in the library, but now it is difficult which changes the interaction between students and lecturers and between students to be changed and less optimal.*

Students reported that they had valued previous face-to-face opportunities to discuss issues with lecturers and their peers. These had been replaced with a “new pedagogy”, which delivers online lectures accompanied by increased assignments to be completed alone.

*Lecturers rarely come down to explain the material and only give a lot of assignments.*

*Less efficient learning and more assignments than explanations from lecturers.*

In the new online context students felt less able to ask questions or contribute.

*Because I feel less confident in expressing my opinion and facing the camera.*

*If there is a discussion forum we feel uncomfortable.*

The “new pedagogy” required learners to be more independent but its lack of interaction created issues.

*Yes, because you are required to be more independent, and learning interactions that do not meet directly make you confused because there are many misunderstandings*

*In short, what has changed is that we are required to understand various tasks and follow the demands of the task quickly.*

*Alone and not sociable.*

*I am confused about the many tasks, and I find it unpleasant to study alone.*

In the online context teaching materials and presentations can lack transparency.

*The material explanation is not as clear as when lecturing offline.*

*Plus starting to enter the world of lectures, a new world that is of course a lot of confusion and more and more confusion due to this online system.*

There were also resource issues for students who had relied on physical resources (e.g. books, databases, teaching materials) and emotional reassurance and support through peer discussion. Whilst these issues might be predicted-for some the impact could be profound.

*It feels like you're struggling alone.*

## **Discussion**

The findings of this research make an original contribution to the research literature concerning the epistemological beliefs of Higher Education students and their relationship to the notion of fun in learning. It is the first Indonesian study to explore this area. The qualitative analysis offers original insights into the effects that the “move online” has had on the study experiences of Indonesian students, and how this has impacted on their well-being. Considering the qualitative and quantitative analyses together allows insights to be developed about the relationship between students’ epistemological beliefs and the impact of the “new pedagogy”. Consequently, this is the first study to show that epistemological beliefs are an important factor in how students respond to and are affected by the move online necessitated by the global pandemic.

The importance given to collaborative social interactions in learning is evident in the open comments’ analysis. This is also seen in Component 1 and 3. Component 1 shows that student’s see learning occurring both through social constructivist and via traditional teacher-led approaches. The distinctions between social constructivist and traditional beliefs found in Western Europe research (Allodi & Carstens, 2013) are not found here. This complements a lack of a dichotomous differentiation identified in previous research in some Asian countries (OECD, 2009; Sheehy, Budiyanto, Kaye, & Rofiah, 2017).

Collaboration is seen as important in learning (Components 1 and 3) and Component 3 indicates that fun, within the context of collaboration is believed to be a prerequisite for effective learning. Research into the nature of fun in online learning is nascent, however the findings here suggest that this component is describing “Collaborative fun” (Okada & Sheehy, 2020). A major impact of the move online on students has been on their opportunities for collaborative learning. In this way a particular type of fun has been removed from their learning experiences.

Component 5 indicates the association between beliefs that thinking and reasoning are more important in learning than specific content and a lack of enjoyment of online study. That so many students (46%) do not enjoy online study [and 45% neither agreed or disagreed] suggests that the “new pedagogy” is that of content delivery. This is confirmed in the qualitative themes in which the model of online learning is perceived as transmission of information accompanied by an increased number of individual assignments. The concept of epistemic match (O’Siochru & Norton, 2014) is helpful in understanding this situation. This refers to the match between a student’s epistemological beliefs and the beliefs that, perhaps implicitly, underpin the pedagogy of their teachers. A student whose beliefs are a close match with those of the pedagogy will be better able to locate the knowledge they need. (O’Siochru & Norton, 2014). In the current research a lack of epistemic match is evidence for some students. This lack of epistemic match, occurring in the context of the other factors identified in the thematic analysis, contributes to student’s lack of satisfaction.

Previous research has suggested that a lack of epistemic match will have a negative impact on students’ academic outcomes (Dai & Cromley, 2014; O’Siochru & Norton, 2014). Our research offers a different perspective in the context of online learning. For students who value social interaction as an essential part of their learning, the impact of the epistemic mismatch appears to have had a profound effect on their personal well-being. Students can feel that they are “struggling alone” and over time this can have a negative effect. A caveat to this argument is that the students were studying within a pandemic in which many aspects of their lives will have been negatively impacted. With this caveat acknowledged, it seems reasonable to conclude that for many there were well-being consequences of a pedagogy without collaborative fun.

### **Recommendations**

This research reveals how Indonesian students’ epistemological beliefs relate to notions of fun in learning, in particular the association between collaborative learning and fun. For many, collaborative fun is seen as essential for learning and their engagement is reduced when this does not exist. This is an issue of “epistemic match” (O’Siochru & Norton, 2014) and to address this educators should directly analyse the pedagogic epistemologies that are being enacted within their online teaching contexts. The findings also inform future comparative research. It has been suggested that there are different conceptualisations of happiness and fun in different cultures (Jaafar et al., 2012) and these findings suggest that in Indonesia learning is not seen as separate from social emotional networks but is part of it (Budiyanto, Sheehy, Kaye, & Rofiah, 2017; Wulandari & de Jager, 2018). This emotional enmeshment of learning and fun arises within social collaboration and so would appear difficult to create with an online transmission pedagogy. The “move online” is likely to continue post-pandemic (Lemoine, Waller, McCormack, Garretson, & ..., 2021). Therefore, eliciting and understanding these factors, which our research shows impact on students learning and well-being during online study, will remain a key issue for educators. Consequently, students’ epistemological beliefs and notions of fun should be part of this area of future research.

### **Conclusion**

The research highlights students’ epistemological beliefs as an important factor in their engagement with online study. It offers original insights that show that there is a relationship between the nature of these epistemological beliefs and students’ beliefs about the relationship between fun and learning. These students had begun their online studies as a consequence of

the COVID-19 pandemic. Many reported a dissatisfaction with their study experience and also decline in their well-being. In exploring this situation, this research suggests that the epistemic match between students and the online pedagogy is an important factor in this situation, which has been previously overlooked.

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## Appendix 1

The Questionnaire items.

1. In which province do you live?
2. What is your current area of study?
3. What is the level of you current study.
4. Which university do you study at.
5. Are you considered by the university as a disabled student?

For the statements below please select a number. 1 is strongly agree, 2 is agree, 3 is neither agree or disagree, 4 is disagree, 5 is strongly disagree

6. Students learn best through collaborative activities.
7. Helping students to talk to one another productively is a good way of teaching.
8. Meaningful learning occurs when students are engaged in social activities with society.
9. Learning can be defined as the social production of knowledge
10. The teacher's role is to teach facts.
11. Teaching should be built around problems with clear, correct answers.
12. Effective/good teachers demonstrate the correct way to solve a problem.
13. How much students get from their learning depends mostly on their effort
14. Students should be allowed to think of solutions to practical problems themselves before the teacher shows them how they are solved.
15. Students learn best by finding solutions to problems on their own.
16. The teacher's role is to facilitate students' own inquiry.
17. Thinking and reasoning processes are more important than specific curriculum content.
18. Students' educational potential is fixed at birth.
19. Students who begin university with 'average' ability remain 'average' throughout their studies
20. All students should be taught in homogenous classes according to their intelligence.
21. I believe there should be a single teaching method applicable to all learning situations.
22. Learning occurs when students reflect on their action in a diverse world
23. Fun is part of curiosity and discovery
24. To learn effectively students must be happy
25. Learning should involve fun
26. To learn effectively, students must enjoy learning
27. Fun activities can get in the way of student learning
28. Has the Covid 19 situation changed your feelings about online study? If so, mention briefly what has changed.