Can the simulated experience of connecting through narratives and personal artefacts raise students' perceptions of their preparedness to communicate with their patients about more than their illness?

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Abstract

Objective: Building therapeutic connections is at the core of quality nursing care. It is often difficult however, for neophyte nursing students to understand how meaningful connections with patients can be formed. Therapeutic connection and person-centred communication are multi-faceted constructs that require exploration and practice.

Methods: In order to explore a new way of enhancing communication skills and increasing the preparedness of students to build therapeutic relationships, a novel learning experience was created. This experience centred around multi-modal simulation which incorporated 360 degree technology, digital platforms and interactive simulation using the Mask-Ed™ (KRS simulation) technique. The experience was offered to an entire cohort of students in their first year of a Baccalaureate nursing program. Evaluation data was collected via pre and post-test questionnaires.

Results: A statistically significant improvement in student's self-reported preparedness to build rapport and initiating conversation with patients was observed. 80% of students felt the intervention had assisted with their learning and would like to see it offered again in the future.

Conclusion: Findings suggest that there is potential in combining interactive 360-degree technology and Mask-Ed™ simulation to augment the learning experience, increase student engagement and to create a safe space for students to explore learning.

I   BACKGROUND

A   *Therapeutic Connections and Artefact*

Patient safety is paramount in healthcare delivery and integral to undergraduate nursing curricula (ANMAC, 2019). In 2017, The Patient Safety Competency Framework for Nursing Students (Levett-Jones et al., 2017) was developed in line with the National Safety and Quality Health Care Service standards (NSQHS) and proposes 9 key areas of proficiency, the second of which is therapeutic communication. Levett Jones et al. (2017) suggest that "on completion of their nursing degree, graduates will be able to demonstrate the ability to use verbal and non-verbal communication skills to convey respect and empathy, and to encourage the person to express their feelings and needs, while at the same time maintaining professional boundaries." (p. 4)

Conceptually, it is acknowledged that successful therapeutic relationships are built on meaningful connections (Mikulincer, 2013). However, it is often difficult for neophyte nursing students to understand how meaningful connections with patients can be formed. Opportunities to practice communication skills are sparse outside the clinical area and often rely on students' role playing with one another (Khalaila, 2014).

One way for nurses to develop a meaningful connection is to gain an understanding of the individual as a person, rather than the individual as a patient (Ziegelstein, 2018). Drawing on the individual's narrative identity and experiences is a key element of this process. Artefacts provide valuable insights into personal narrative and can be used as a tool for nurses to develop connections with their patients. Artefacts are tangible objects that people keep which link important events and memories (Smith & Lizette, 2011). They create a platform on which communication can be facilitated and conversation commenced (Shkirando, 2013).

To practice the art of using artefacts to elicit conversation, a novel educational intervention was developed. This intervention was underpinned by active learning and experiential learning theories (Kolb, 1984; Dewey, 1938) and was built on the pedagogy of Mask-Ed™. Mask-Ed™ was combined with an interactive 360-degree video which allowed students the opportunity to identify patient artefacts which could be used to promote conversation.

B   *Mask-Ed™*

Mask-Ed™ is a simulation technique in which an educator is disguised from the students using silicone props that allow a realistic character to be presented. The educator then coaches the students through the interactions with the character (Frost & Reid-Searle, 2017). The character developed for this interaction was Marjorie Templeton. Marjorie has a full medical and social history. She identifies as a retired registered nurse which provides a unique and valuable commonality for her interactions with nursing students. Mask-Ed™ is a technique developed by Professor Reid Searl at CQU. Evidence supports the role of Mask-Ed™ in improving communication with patients (Reid-Searl et al., 2014), responding to patients (Frost et al., 2017), providing intimate care (Reid-Searl & O'Neill, 2017), as well as promoting student engagement and satisfaction in learning (McAllister et al., 2013).

C   *360 Degree Video*

360-degree video are videos which are recorded with multi-directional camera systems that capture all directions simultaneously (Snelson & Hsu, 2019). Research specifically into the use of 360-degree video is sparse; however it could be seen to sit within the immersive reality continuum. Immersive reality includes a continuum of technology enhanced learning techniques that range from Virtual Reality (VR) to Augmented Reality (AR) (Feurstein, 2019). Virtual reality

creates a computer generated environment. It is fully immersive and uses a headset to simulate a new reality for the wearer. Augmented reality allows computer generated items to be placed into the real world. These computer generated items can be accessed via hand-held devices. Augmented reality is a less immersive experience; however, it is also less expensive and therefore a more scalable option. AR is also more widely tolerated by learners (Hsin-Hun Liou et al., 2017). Mixed reality (MR) is a more immersive form of AR which allows computer generated items to be viewed via a head mounted device. Both VR, MR and AR have been shown to enhance learner engagement and motivation (Frost et al., 2019), allow students to practice communication (Gold & Windschield, 2020), and to understand spatial awareness (Leonard & Fitzgerald, 2017). 360-degree video was used in this study in two ways, the first would sit closer to VR on the continuum, as the 360-degree video was used with a headset. The video was also accessible on a handheld device allowing students to navigate the scenario themselves, which could be considered closer to an augmented reality experience.

II METHODS

A *Study Design*

A mixed method pre-post questionnaire was used to evaluate the learning intervention in an undergraduate cohort of nursing students in their first year of study.

B *The Intervention*

Mendez et al (2020) suggest that AR and VR technologies have the potential to promote student-centred learning and revolutionise nurse education. As our primary learning objective was to recognise the relationship between person-centred care and effective communication skills, we chose to combine these AR/VR technologies with Mask-Ed.

The Mask-Ed™ character used in the project was Marjorie Coral Templeton. Marjorie is an 84-year-old retired nurse, who is in respite care following hospitalisation for a urinary tract infection and associated delirium. Her husband Jock has been in a nursing home for three years. Prior to Marjorie entering respite care, she was Jock's primary carer. Given her career history, Marjorie takes a keen interest in health education and health related issues.

In order to allow the students an insight into the life of Marjorie, a 360 degree video was filmed at an aged care facility. Using 'Hotspots', students were able to zoom in on several artefacts placed in the room that held personal meaning for the character. This video was presented to the students in two formats - The first was through a VR headset in which individual students could enter the aged care room and explore in the first person. The immersive nature of virtual reality was used to promote empathy and understanding of the situation. Dean et al. (2020) suggest that VR can promote empathy in some ways but suggest that the term empathetic curiosity (Halpern, 2011) is more appropriate. The second format included the same 360-degree video with integrated hotspots (artefacts which could be highlighted) that could be viewed and discussed in groups using an electronic hand-held device. This allowed students to explore the room together, navigate it, and collaboratively generate conversation points for future face to face interaction with Marjorie. This promoted peer learning, which can be defined as learning with and from each other (Boud et al., 2001). This multi modal approach was designed to cater for multiple learning styles and enable students to explore the same learning from different perspectives.

C *Study sample*

The study sample was the first-year cohort of Bachelor of Nursing students at an Australian University. This three-year bachelor program accepts students directly from secondary school in

addition to students who enter via alternative routes (e.g., course transfers, graduates from other degrees and mature-aged entry). There were 288 students enrolled in the unit at the time of the study. 146 (51%) of enrolled students participated in the learning intervention. All of the students enrolled in the unit were invited to participate in the learning intervention. Completion of the questionnaire was voluntary and did not influence the student's grades in any way. An academic that held no teaching responsibilities in the unit was responsible for posting the recruitment announcement and answering any questions related to the research.

D   Questionnaire

Students' experience of the new learning intervention was evaluated via a mixed methods pre and post-test questionnaire, delivered online via the unit learning management system (LMS), Canvas. Students completed the pre-learning intervention questionnaire immediately before engaging in the learning intervention. Students completed the post-learning intervention questionnaire immediately after engaging in the learning intervention. In total, students were required to answer eight questions, seven related to quantitative elements and one question related to qualitative feedback on the specific learning intervention. To test face validity of the questionnaire, individual questions were piloted with a cohort of students that were not undertaking the unit in question.

Table 1
Pre and post learning intervention questions provided to participants

Pre-intervention (preparation for practice): *Options were provided as a Likert scale with 0 being 'not prepared' and 10 being 'totally prepared'.*   Q1. How prepared do you feel to talk to patients about aspects of their life other than their medical condition, i.e. building rapport?
Post- intervention (preparation for practice): *Options were provided as a Likert scale with 0 being 'not prepared' and 10 being 'totally prepared'.*   Q2. How prepared do you feel to talk to patients about aspects of their life other than their medical condition, ie building rapport?
Post-intervention (learning outcomes): *Options were provided as a Likert scale with 0 being 'Did not help' and 10 being 'Helped me to fully meet the objective'.*   Q3. Do you feel the simulation today assisted in helping you meet the learning objective: *'Recognise strength in self, others and communities?'*   Q4. Do you feel the simulation today assisted in helping you meet the learning objective: *'Develop the ability to examine reflexivity with narratives of illness and wellbeing using diverse media?'*   Q5. Do you feel the simulation today assisted in helping you meet the learning objective: *'Recognise and discuss strengths and capabilities of individuals and communities?'*
Post-intervention (intervention effectiveness): *Options were provided as a Likert scale with 0 being 'Did not help' and 10 being 'Helped a lot'.*   Q6. On a scale on 0-10, rate how the 'technology-based VR exploration' of the room and 'digitally enhanced room' assisted your learning?   Q7 On a scale on 0-10, rate how the 'simulation-based interaction with Marjorie' assisted your learning?
Post intervention (qualitative responses): *Students were able to provide free text responses to this question.*   Q8. Would you like this type of simulation again? *'Yes/ no'* and *'If yes, why?'* or *'If no, why?'*

III   ANALYSIS

Descriptive statistics including *n*, median, mean score, standard deviation, 25th percentile and 75th percentile were reported for all pre and post-test responses (Q1-Q7) (Table 2). A one-sided paired Wilcoxon signed-rank test was performed using R Studio to analyse the differences between pre and post-test scores for Q1 and Q2 (Derrick & Write, 2017). A *p*-value <0.05 for any item was considered significant.

To best demonstrate the data, questionnaire responses were summarised using diverging stacked bar charts (Figure 1) (Robbins & Heiberger, 2011). Given questions 1-7 were posed in a Likert scale, authors determined that responses between 0-1 would be considered strongly negative, responses between 2-4 considered negative, a response of 5 considered neutral, responses between 6-8 considered positive and responses between 9-10 considered strongly positive. Using this method, positive responses are represented in shades of blue and are demonstrated as a positive percentage of all responses. Negative responses are represented in shades of red and are demonstrated as a negative percentage of all responses (Gaida et al., 2016). Neutral responses are represented in grey.

Free-text responses were coded and examined using thematic analysis (Braun & Clarke, 2013). Two members of the team independently coded the free-text responses. Initially, codes were identified based on the actual words or terms used by respondents. Following this, the authors looked for emergent patterns within and between the codes. When this was completed, authors generated preliminary themes from the coded data. This rigorous process resulted in four themes being condensed further into two themes with subthemes contained within. Authors then returned to the dataset to ensure that the themes were accurate representations of the data. Themes as agreed by the authors were defined and named for clarity and purpose.

IV   RESULTS

A   *Quantitative Analysis*

Descriptive statistics for questions 1-7 are represented in table 2.

Table 2
**Snapshot of student pre and post learning intervention responses**

	n	Mean	Standard deviation	Median	25th percentile	75th percentile
Q1	140	6.557	2.012	7	5	8
Q2	117	7.427	1.709	8	6	9
Q3	112	8.179	1.532	8	8	9
Q4	111	8.459	1.5	9	8	10
Q5	108	8.139	1.519	8	7	9.25
Q6	107	6.794	2.509	7	5	9
Q7	106	8.519	1.731	9	8	10

Of the 146 students who participated in the learning intervention, 140 students completed the pre-test questionnaire (Q1) and 117 students completed the repeated question (Q2) in the post-test questionnaire. Results indicated that there was a statistically significant improvement in student preparedness in being able to talk to patients about aspects of their life other than their

medical condition after participating in the learning intervention (difference between the groups p=<0.001).

More than 90% of respondents agreed or strongly agreed to statements Q3–Q5 (Figure 1). This indicates that overall, students felt that the learning intervention supported them in being able to meet the key learning objectives of the session. With regard to the learning intervention itself (Q6-Q7), students felt the Mask-Ed simulation assisted with their learning to a greater extent than the digital technology elements (95% positive responses compared with 77% positive responses).

Figure 1
**Respondents' feedback on the new learning intervention (diverging stacked bar chart)**
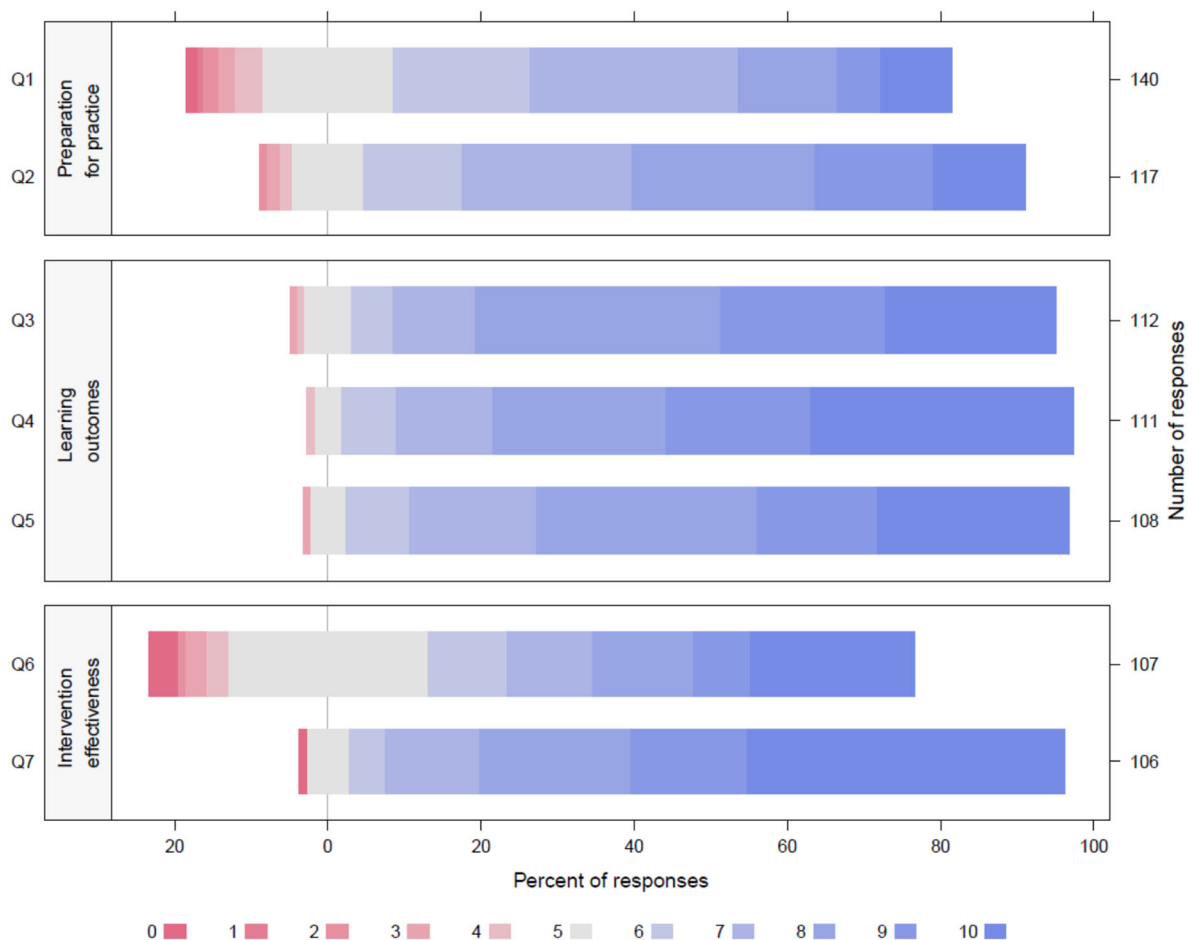
B   *Qualitative Analysis*

Of the 97 students who answered question 8, 89 respondents (86%) indicated that yes, they would like to experience a similar type of simulation again as they felt it had assisted in their learning. Six respondents did not want to see any of the elements again in the future, and the remaining three respondents identified that they would like to experience the Mask-Ed component alone in the future, without the 360 degree video and digital platforms component.

Thematic analysis revealed that respondents felt the learning intervention (Theme 1), which combined the Mask-Ed and technology-based teaching methodologies created a safe space for students to explore and develop practical skills such as rapport building. Additionally, preparation for practice (Theme 2) was relevant in terms of students feeling able to develop and practice skills

in a manner which will support them in their transition into clinical placement and practice. The interrelationship between thematic findings is demonstrated in Figure 2.

Figure 2
Student's perception of the learning intervention

Student's perceptions of the learning:
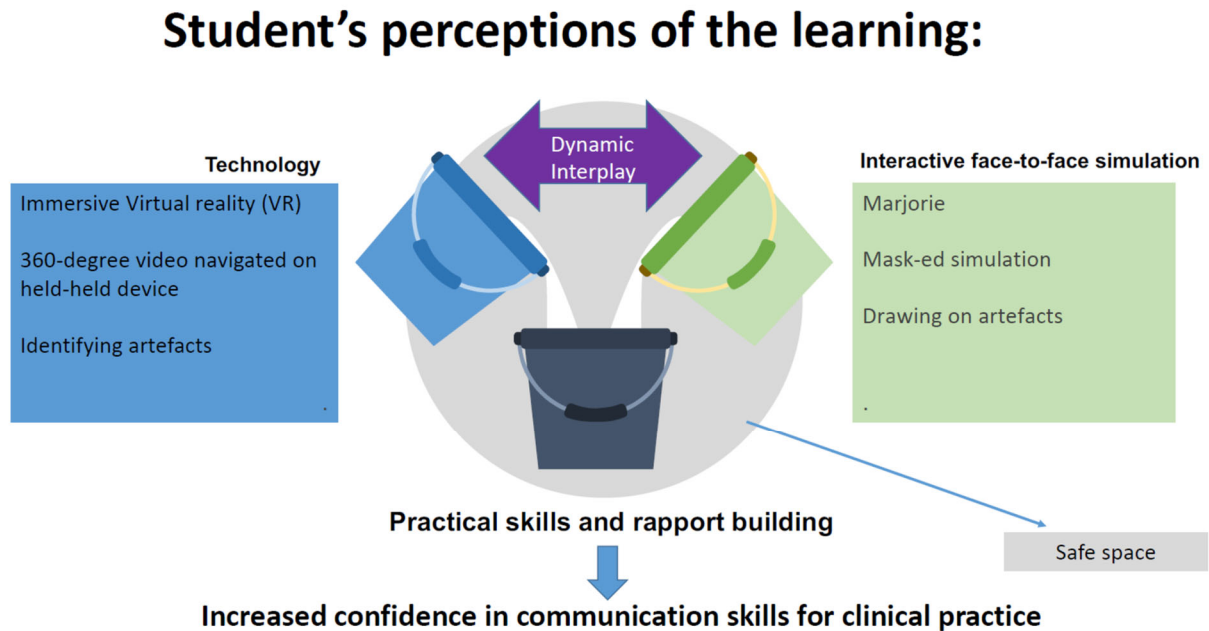
C   *Theme 1. The Learning Intervention*

An acknowledgement of the role of a safe learning environment where students were free to make mistakes emerged from the data:

> "This experience is extremely useful in creating a safe space to practice these skills and gain confidence and experience before being thrown into the deep end" (Participant 86).

Additionally, students were extremely receptive to the integration of Mask-Ed™ simulation and valued the opportunity to interact with a simulated healthcare consumer in the context of the learning environment:

> "Marjorie was real enough to help us not feel awkward, but also safe to ask questions and have some freedom to potentially make mistakes" (Participant 91).

The value of the technological interventions was mixed amongst respondents. Some respondents identified that they enjoyed the use of technology:

> "The prevalence and availability of technology in this digital age can greatly assist both the student and the instructing staff to safely and interactively involve themselves in the concepts being taught. These would otherwise be far more challenging, from a practical, safety and ethical viewpoint" (participant 26).

Other students voiced side effects with their experience in the VR headset:

> "… the VR headset, (it) caused a rather large headache and eye ache due to the split vision it caused, no matter how much the eye parts were adjusted" (Participant 6).

Other students reported connection issues:

> "The Virtual Reality mask were hard to use in conjunction with mobile phones as the mobile was unable to connect with the site" (Participant 12).

However, the combination of the two activities was positively received by the students and appeared to enhance their learning:

"….actually being able to see her room before speaking to Marjorie helps build confidence when communicating face to face" (Participant 70).

"…it helps to build rapport with a completely unknown consumer. I believe, it is very important for nurses to build a rapport with consumer in a short period of time" (Participant 48).

D   *Theme 2. Preparation for Practice*

Respondents identified the value of the learning intervention in preparing them for undergraduate placements and in terms of preparing them for their future clinical nursing practice:

"Practice is always good, and it made me feel a lot more relaxed coming up to placement. I feel I will be able to make conversation and consequently build rapport which is something I struggle with when nervous" (Participant 42).

"I think it helped me mentally prepare for placement" (Participant 52).

A shift in self-reported preparedness and communication skills related to interacting and building rapport with patients emerged from the data:

"It allows us experience in communicating with another individual. It also inspired us to focus on details and use these in conversation" (Participant 24).

"I would love to engage in this simulation again as it helped me gain a better understanding in terms of understanding patients' stories better through the use of artefacts etc" (Participant 80).

V   DISCUSSION

The multi-modal approach used in this study was underpinned by theories of active and experiential learning. The learning intervention enabled students to develop their self-rated preparedness by engaging with learning content in diverse ways including the Mask-Ed ™ (KRS simulation) technique, 360-degree technology and digital platforms. In line with other research that demonstrates the power of the Mask-Ed™ technique (Reid-Searl et al., 2014), this study demonstrates that realistic interactions with Marjorie, a Mask-Ed™ character were valued by students. Additionally, providing a safe learning environment as well as a multi-faceted approach to delivering learning content appealed to most students in the cohort.

Students disliked the virtual reality component, with some reporting adverse reactions to the headsets such as nausea and headaches. This has been found as an issue with VR more generally (Geršak et al., 2020). The 360-degree video element of the intervention was more positively received and created a novel and engaging way to facilitate connection between place, person and time. The students valued having video access to Marjorie's room and felt it supported them in being able to draw on artefacts as a way to build a therapeutic connection with her. One student did comment that it felt 'weird' to look around the room before having met the character as it felt like an 'invasion of privacy'. This observation demonstrated both the realistic nature of the simulation and that the student was considerate of person-centred care.

Student's self-reported preparedness in developing connections with patients was increased after participating in the learning intervention. This suggests the value of a combination of different simulation modalities in promoting artefacts as a tool to develop meaningful connection. Although this self-reported preparedness may not directly correlate with clinical effectiveness, it is valuable in preparing students for clinical placement and provides opportunity for safe exposure to the complexities of communication and rapport building.

Additionally, the intervention allowed students the ability to try out questioning techniques and to learn with and from their peers without fear of causing distress. The development of a safe environment was valued by students as it provided students with the space and time to frame questions in multiple ways for therapeutic effect. Overall, feedback from students indicated that they would like to see the techniques used again in the undergraduate program.

Developing confidence and preparedness in connection and drawing from artefacts to better understand the narrative of an individual is a valuable outcome for the first-year student nurse. For many of our students, the learning intervention may have been their first experience with connecting and engaging with individuals who are vulnerable. Additionally, the combination of approaches appeared to offer potential in promoting empathetic curiosity within the learner.

VI   LIMITATIONS

This study is limited by its sample size and use of only one cohort of students in one institution. The quality of the 360-degree video, particularly when viewed through the VR headset was also sub-optimal and may have contributed to the student's dislike of this element of the intervention. Additionally, we acknowledge that in light of the current COVID-19 pandemic, the use of VR headsets may become an infection control issue and thus inappropriate for collective use.

Some education facilitators were unfamiliar with the technological elements of the learning intervention and were unable to troubleshoot issues with the technology in real-time during the sessions. Most of these issues centred around navigating use of the VR headsets and may be a further reason that students did not rate this part of the intervention. As a result, we recognise that the use of new technology such as the VR headsets requires the provision of more detailed and targeted orientation and training than anticipated.

VII   CONCLUSION

Student's self-rated preparedness to communicate and build rapport with patients increased with this educational intervention. Findings suggest that there is potential in combining modalities such as interactive 360-degree technology and Mask-Ed™ simulation to augment the learning experience, and to create a safe, interactive space for students to explore and learn. Further study is required to compare student's self-rated preparedness following the learning intervention with their professional performance in the clinical setting.

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