

Tech Dance: Usage of Technology in Learning of Social Dancing

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ABSTRACT

Under the term sustainable happiness a more sustainable way of pursuing happiness is defined. One way toward this might be social dance. As dancing is highly correlated with an increase in happiness, this paper analyzes how technology can enhance the dance education to help potential prospects or experienced dancers in their learning process. By interviewing 17 social dancers this research concludes with a framework that lists features a technological solution should entail to positively influence social dance education.

Keywords sustainable happiness, social dance, technology

INTRODUCTION

In 1987 the Brundtland Commission's report showed that the world is on a harmful road regarding its development and impact for all life on the planet. It brought up the definition of sustainable development, which is defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Imperatives, 1987: 24). Following up on this, the United Nations presented a document known as "Agenda 21", which outlined challenges and plans around different fields. It also led the concepts of sustainable development and sustainability becoming subject of academic and political discourse. As O'Brien (2013) defines the term "Sustainable Happiness", this argues to bring a 'new' element into the sustainability discussion, because it shows a link between happiness and sustainability. Therefore, it is necessary to reevaluate the way how happiness is pursued (O'Brien, 2013). As people confuse the "path to the 'good life' as the 'goods life'" (Kasser, 2006 as cited in cf. O'Brien, 2013: 231) in the pursuit of happiness, this often happens at the expense of others and the natural environment (cf. O'Brien, 2013: 231). Therefore sustainable happiness, defined as "the pursuit of happiness that does not exploit other people, the environment or future generations" (O'Brien, 2008: 289) seems a more sustainable way of reaching personal happiness. The question is then, how would one reach this state in such a manner? Existing research shows physical activity is a significant factor on the observed level of happiness (cf. Mohammadi, Batvandi & Saberi, 2015: 49; cf. H. Huang & Humphreys, 2012: 16), even able to treat light to severe depression and counter the feeling of anxiety (Elavsky et al., 2005 as cited in cf. Mohammadi et al., 2015: 49). As dancing also classifies as a sport (Guarino, 2015), a focus can be set on dancing and how it relates to sustainable happiness. On multiple occasions studies have found a definite link between dancing and happiness (Duberg, Hagberg, Sunvisson & Möller, 2013; Birks, 2007; Zentner & Eerola, 2010; Weinberg & Joseph, 2017 as cited in Delgado, 2016). For example studies shown an increase in happiness, life-satisfaction, health (Weinberg & Joseph, 2017); mood improvement (Zentner & Eerola, 2010); better concentration and a greater sense of peace and tranquility (Birks, 2007) after participants became susceptible to dancing. Thus dancing proves to be an activity which provides happiness under the criteria of sustainable happiness. This makes the step toward learning to dance a valid choice for the pursuit of sustainable happiness. Especially the social dance, that is said to incorporate all forms of partner dancing done for pleasure or recreation (Wright, 1992), is arguable an activity leading to joy, as it's shared with people one trusts (Freeman, 1997). But to get to this level of shared trust, it is necessary to learn the dance first. This paper aims to provide insight into advancing the learning process of social dance by focusing on the possible usage of technology. In the field of dancing there are existing solutions already on the market, however these seem to be hardly incorporated within social dance learning. Giving that this research will contribute to the understanding of what

a technical solution should entail, it aims to provide insight for future solutions to greatly motivate and enable potential new prospects and experienced dancers in their learning pursuit, impacting toward a happy lifestyle, also overlapping into the sustainability field. This research will be carried out with a qualitative approach, answering the following research question:

”How should a technology solution be to have a positive impact on the learning of social dance?”

Delivering an overview where dancing is situated regarding the sustainability aspect, this paper will first analyze existing literature to further outline the link between sustainability, happiness and dancing. This will clarify that there is an interconnection between dancing and sustainability over the intermediate area that is called happiness. In the second step the focus lays on the exploration of different kinds of technical support. Therefore showing with the analyze of existing literature in which way people learn to dance and how dance is already enhanced by technology. In the following qualitative research dancers on different experience levels will be interviewed how they use existing technology to influence their learning performance and furthermore what they expect a suitable solution to incorporate.



THEORY

Sustainable Happiness

Previous research shows that happiness has effects into different fields (Davidson, Mostofsky & Whang, 2010; Seligman, 2004; Steptoe, Wardle & Marmot, 2005; Veenhoven, 2008; Brown & Kasser, 2005; Nisbet, Zelenski & Murphy, 2011). More specifically, that happiness is positively associated with positive health benefits (Davidson et al., 2010; Seligman, 2004; Steptoe et al., 2005; Veenhoven, 2008 as cited in O'Brien, 2013), a lower inclination towards materialistic values (Brown & Kasser, 2005 as cited in O'Brien, 2013) and that it correlates with a relatedness to nature (Nisbet et al., 2011 as cited in O'Brien, 2013). In her papers, O'Brien (2008) addresses the question if the studying of sustainable happiness is pleasant in the face of climate change. Sustainable happiness, as she defines it, is "the pursuit of happiness that does not exploit other people, the environment or future generations" (O'Brien, 2008: 289). And while the inclusion of the term happiness into academic or policy circles is still looked at with skepticism, it can be said that a major cause of the environmental exploitation and degradation comes from the untempered pursuit of happiness. This especially holds value, as it is still debatable how sustainable happiness can stand ground with the other sustainable development goals (O'Brien, 2008).

In the field of development theory, practice and policy, a paradigm shift has already happened. "Sustainable happiness represents another paradigm shift. It suggests that human pursuit of happiness has positive and adverse impacts, locally, and globally in the present and far into the future" (O'Brien, 2008: 289). This paradigm shift is underlined by the fact that even impoverished, suicidal or depressed people care not only about a relief from suffering, but also desperately about finding a meaning in life, a kind of purpose (Seligman, 2004 as cited in O'Brien, 2008).

On the policy level sustainable happiness is considered to hold relevance to the United Nations' resolution on happiness and well-being (United Nations, 2011 as cited in O'Brien, 2013). In the 2011th resolution by the United Nations it was recommended that member states should "give greater attention to happiness and well-being in their economic and social development policies" (United Nations, 2011 as cited in O'Brien, 2013). This aligns with the Millennium Development Goals that encouraged member states to consider the usage of a "gross national happiness" (GNH) instead of a "gross domestic product" (GDP). It can be seen that the United Nations place importance on the inclusion of happiness into their decision making which is underlined by O'Brien (2013) who states that a sustainable happiness exploration in political areas is ideal for the integration of sustainability, happiness, and well-being. Based on her work: "sustainable happiness has the potential to create game-changing shifts in attitudes, policies, practices, and behaviours" (O'Brien, 2013: 250), holding people accountable for their pursuit of happiness and helping them to understand that their well-being is interconnected with other people.

Cloutier & Pfeiffer (2015)'s happiness-centric approach toward sustainability is more on a meta level and thus tries to contribute toward a definition base. They argue that the aim for meeting an improvement of community level happiness could lead the triple bottom line to focus toward a sustainable future. The understanding and engaging with this goal might be easier for a wider segment of people, as it may be a goal easier to achieve than social equity, environmental protection, cultural competency or economic development. Furthermore, the focus on happiness may lead to a quicker involvement in sustainable community development projects, as people already understand the language and outcome (Cloutier & Pfeiffer, 2015: 3).

As the mentioned literature points towards a more sustainable pursuit of happiness, it is still questionable how to pursue personal happiness as our understanding how to pursue it is often just informed through informal learning (media, friends, parents) and nonformal education (self-help books, support groups). The outline that "sustainable happiness should be an aim of education and a good education should contribute significantly to personal and collective happiness that does not exploit other people, the environment or future generations" (O'Brien, 2008: 293) doesn't make it easier to come up with actions that an individual can pursue while fulfilling these criteria. As people confuse the "path to the 'good life' as the 'goods life'" (Kasser, 2006 as cited in cf. O'Brien, 2013: 231) in the pursuit of happiness, this pursuit often happens at the expense of other people and the natural environment (cf. O'Brien, 2013: 231). This is also addressed by Winter (2000), who points out that human activity accompanied by emotions, thoughts, attitudes and values is a cause for the problematic environmental situation. Arguing that the pursuit of happiness might be part of the reason for unsustainable exploitation of other systems (cf. Kjell, 2011: 3).

The question then is, what activity exists to heighten one's happiness in a sustainable way?

Happiness through Dancing

One of the activities that is highly correlated with happiness is dancing. Multiple studies have shown that dancing has a positive influence on mood and happiness (Duberg et al., 2013; Birks, 2007; Zentner & Eerola, 2010; Weinberg & Joseph, 2017 as cited in Delgado, 2016). Duberg et al. (2013) carried out a two year study with teenagers that presented mental health issues, such as anxiety, depression or stress together with psychosomatic symptoms like neck and back pain. This research showed that two dance classes a week lead to an improvement in the psychosomatic symptoms and the reporting of feeling happier (Duberg et al., 2013). Another study reported fewer negative thoughts, better concentration and a greater sense of peace and tranquility after 9 weeks of "Salsa" lessons for people with depression (Birks, 2007). One study also showed the result that dancing improves the mood (Zentner & Eerola, 2010) and another study by Weinberg & Joseph (2017), in which they interviewed 1000 people, found out that often people who danced felt happier

and even more satisfied with their lives, especially in relationships, health, and goals achieved over the years.

Silva (cf. 2019: 218) outlined in her paper the diverse benefits of dancing especially for older people. Here she characterized dance as a complete activity that equally involves cognitive, psychological, physical and social elements. Within her paper she referred to different studies that show the benefits of dancing, under which fall improvements in muscular strength, endurance and balance for older adults' functional fitness (Hwang & Braun, 2015), on the neuro-cognitive function level (Kimura & Hozumi, 2012) and concerning dual-task performance (Hamacher, Hamacher, Rehfeld, Hökelmann & Schega, 2015). Moreover on the psychological level she outlined the decrease in pain levels (Resnick, 2001) improvements regarding psychological well-being concerning general health and bodily pain (Hui, Chui & Woo, 2009) and on the social level an improvement in social activity and community involvement (Krishnavelli, 2007).

Especially the happiness correlation can be further underlined by Freeman (1997) who argues that activities shared with people one trusts, leads to joy. As Freeman (1997) state, trust is gained when people are able to predict what other people do, a state that can be reached by repeated cooperative actions. Aside from the social aspect, dancing seems to have a direct impact on the brain. As music stimulates the reward centers of the brain, dance activities activate the brain's sensory and motor circuits parts (Edwards, 2016), accordingly: "When humans physically move to a beat (even simply bobbing the head), the auditory and motor areas of the brain synchronise to produce brain waves which parallel a powerful emotion of enjoyment" (Fan, 2013 as cited in Blackler, Desai, Swann, Chamorro-Koc, Moyle & Stephens, 2019: 8)

On the social aspect it is said that connecting with others plays a great part in the prevention of becoming isolated, which may has an impact on long-term wellbeing (Hawton et al., 2011 as cited in cf. Cloutier & Pfeiffer, 2015: 2).

As the benefits of dancing are laid down, the next question is then how people actually learn to dance.

Dancing - Learning in General

For people learning dancing through dance classes, the feedback they are able to receive is important but also limited, as teachers often have to manage a larger group of students (Hsia, Huang & Hwang, 2016 as cited in cf. Dias Pereira dos Santos, 2017: 1). Especially on the learning process it is outlined, that there are two important challenges to master: musical (how to interpret a song) and motor skill (how to move the body according to instruction), which can be overcome by repeated practice to heighten the skills in those areas (Côté-Laurence, 2000 as cited in cf. Dias Pereira dos Santos, 2017: 1).



Learning Figures

Within the field of motor learning different studies were conducted, researching learning in physical spaces (Martinez-Maldonado et al., 2016; Santos, 2016). In one study it was found that students visualizing their movement performed better than their peers, just receiving performance evaluation (Matsumura, Yamamoto & Fujinami, 2011 as cited in cf. Dias Pereira dos Santos, 2017: 1). Students without preexisting knowledge especially benefit to first observe a professionals' dance demonstration (cf. Yi, 2018: 252). Wanting to acquire the seen dance figure, the students needs to repeat and vary the movement which will help them perform it faster and more accurately (Diedrichsen & Kornysheva, 2015 as cited in cf. Rivière, Alaoui, Caramiaux & Mackay, 2019: 2). On this area of learning dance figures Rivière et al. (2019) interviewed contemporary dance professionals for their learning strategies (cf. Rivière et al., 2019: 4) and came up with the following main steps.

- Observation
- Segmentation, where the movement is split into smaller parts
- Mental simulation
- Imitation of the entire movement
- Marking, the highlighting of key elements to work out the broad movement
- Personal adaptation, which is said to make it easier to execute or more personal
- Repetition of one of the above learning strategies

Apart from the above mentioned segmentation there exists also a re-assembling process which combines decomposed segments into longer phrases again (cf. Rivière et al., 2019: 14). And while these steps are argued to lead to a fast learning process it has to be noted that "learning practices leading to better performance are not necessarily preferred by learners" (Carter & Grahn, 2016; Kornell & Bjork, 2008 as cited in Rivière et al., 2019: 18)

Traditional Classes

One of most common ways of learning dance is in traditional dance classes and even though technology is advancing, it has yet to be incorporated in a classroom's everyday learning practice. Reasons therefor are under which the effort to familiarize with the new technology, high costs of buying and installing software and systems and anxiety that students will be discouraged from actively engaging in practice and experimenting with motor skills (cf. Chan, Leung, Tang & Komura, 2010: 3358). On the other hand more and more students seem to be enthusiastic about the new teaching methods (Leijen, Lam, Wildschut, Simons & Admiraal, 2009; Goulimaris, Koutsouba & Giosos, 2008 as cited in cf. Chan et al., 2010: 3358). This slight resistance against technological innovation is even more surprising as a connection between dance and technology was build already

when dance teachers and researchers used videos for recordings, interpretation, analyses and to save dances or choreographies (Birringer, 2002 as cited in cf. Chan et al., 2010: 3357). This slight aversion for new solutions is unfounded as "the intention is not for [...] tools to replace teachers, but rather to provide supplementary opportunities to engage with technology to enhance learning that has already taken place" (R. E. Cisneros, Stamp, Whatley & Wood, 2019: 15). For instance on the area of online instructional pedagogy for dance Parrish (2016) outlined these as seen in Figure 1.

Insert Figure 1 about here.

This shows that even in a completely out of the classroom situated solution has the necessity for professional assist and a sense of social aspect. Furthermore Parrish (2016) outlines the sense of belonging essential to help online students engage, persevere and have an overall course satisfaction (Liu, Magjuka, Bonk & Lee, 2006 as cited in cf. Parrish, 2016: 170).

Dancing - Technology Solutions

Dias Pereira dos Santos, Yacef & Martinez-Maldonado (2017) point out that partner dance learning is a motor learning activity which could be positive influenced by technology. Unfortunately it is still ambiguous which the most effective way of providing feedback is even though it can be said that the attempts to enhance motor learning is progressing (cf. Dias Pereira dos Santos, 2017: 2). On the general area of dancing, existing studies already outlined a lot of benefits to incorporate technological solutions, on the one hand for class instructions and on the other for private learning. Concerning participation, students might be reluctant to speak up in class, but more comfortable using multimedia tools (Butler, Marsh, Slavinsky & Baraniuk, 2014 as cited in cf. Li, Zhou & Teo, 2018: 4). Furthermore as a reassurance it is argued that technology can offer opportunities for personalized instruction, communication, cooperation and feedback (Lai, 2008; Leijen, Admiraal, Wildschut & Robert-Jan Simons, 2008 as cited in cf. Dania, Hatziharistos, Koutsouba & Tyrovola, 2011: 3356) given that the focus lies on improving the instruction and human movement and it does not replace traditional teaching methods (cf. Dania et al., 2011: 3356).

Again, technological solutions offer students and teachers more flexibility in place, pace, time, content, course delivery and logistics and instructional approach and resources (Collis, Moonen & Vingerhoets, 1997; Boer, 2004; Simons, 2006 as cited in cf. Leijen, Admiraal et al., 2008: 148). Also they can assist the students in practice by helping with timely and appropriate rhythm accompaniment (cf. W. Yang, 2019: 193). One example would be the upload of music for class



assignments enabling students to familiarize themselves with the music before an encounter in class (cf. Lepczyk, 2009: 4). In general technology offers an easier access to information, music, and dance footage from all over the world, additional contact with teachers and peers and opportunities for skill development in reflective practice, communication and technology skills (cf. H. Huang & Humphreys, 2012: 176).

On the topic of graded classes, technology can help track the time and frequency students spend on tasks, leading to a fairer and evidence-based grading concerning studying effort (cf. Li et al., 2018: 9). Furthermore by allowing peers and teachers to view and comment on students dance videos a better monitoring of the progress is possible compared to a traditional classroom showing approach (Anderson, 2012 as cited in cf. Li et al., 2018: 4). Further benefits of online learning are presented by Parrish (2016) in Figure 2.

Insert Figure 2 about here.

On the general topic of dancing there exist already a lot of different concepts and existing solutions besides online learning. "There are apps that teach you how to perfect your pirouette, bust out a new Hip-Hop move, teach tempo and rhythm, analyze choreography, and even assist with attaining breath support as you move" (Parrish, 2016: 175). Furthermore in her paper Silva (2019) shows different types of technological solutions under which fall video instructions (F. A. Maruf, Akinpelu & Salako, 2013; F. Maruf, Akinpelu & Salako, 2013), instructions via Skype (Krampe & Musterman, 2013), dance games (eg. Dance Dance Revolution) plus enhancements (Inzitari, Greenlee, Hess, Perera & Studenski, 2009), custom made solutions like a wheeled mobile robot (Chen et al., 2015), cameras with a tracking algorithm (Lange et al., 2011), AR¹ using Google glass (Butt, 2017; Abbasi, 2017) or the Kinect incorporated with avatars for coaching classes (Cyarto, Batchelor, Baker & Dow, 2016). Especially on the context of musical skill, studies attached sensors onto students to help them in the learning of rhythm (Drobny, Weiss & Borchers, 2009), or modeled their postures and exercises for later examination (Hinton-Lewis, McDonough, Moyle & Thiel, 2016; Thiel, Quandt, Carter & Moyle, 2014). The use of augmented feedback to learn dance choreographies was studied by Drobny & Borchers (2010) and the creation of an immersive dance experience with the help of motion capture², augmented reality, telepresence and electro-active

¹Augmented reality (AR) describes computer-generated content that is overlaid on the environment of the real world (cf. Christensson, 2016).

²Motion Capture is the process of digitally recording movements of a person and translating them into computer-animated images (Merriam-Webster, n.d.).

polymer clothing was tried out by Saxena, Feldt & Goel (2014). One of these approaches and other technologies which occurred over multiple papers will now be looked at in detailed sections.

Annotation

”Before the advent of computer technology, dance notation systems were used to represent movement as signs on paper” (Guest, 1984 as cited in Ebeweuter, 2005: 80). For the usage of notation applications a great understanding in movement analysis and knowledge of it’s symbolic vocabulary was needed (cf. Ebeweuter, 2005: 80). Now with the usage of technology these notations are mainly incorporated in the sense of comments, to help in the understanding of eg. video material. For example the program Ubersense allows to upload a video, highlight areas of the video and add time coded annotations (cf. Parrish, 2016: 176).

Vibration

While vibration is more often used in projects to give impulses for the right timing of a move (Nakamura, Tabata, Ueda, Kiyofuji & Kuno, 2005 as cited in cf. Chan et al., 2010: 188) or an action (cf. Yi, 2018: 251) it can also be applied as a intermediary for leading and following cues. The study by Camarillo-Abad, Sandoval & Sánchez (2018) goes into the topic of guiding people with technology in dancing. Here they compare existing technologies and conclude to use vibrations giving cues to the follower. It has to be nevertheless noted, that the cues do not equivalent to usual leading cues as it is delivered purely by vibration.

Motion Capture

(Latin) dance has high requirements on dancer’s qualities, concerning speed, endurance, balance, flexibility and power. To grasp these dance skills by only visual capture is difficult, gaining insight if posture or muscle tension are correct, hard to judge. By using motion capture technology the movement is captured more fully. This in turn is said to help compare trajectory data and give better feedback to the student (cf. Xu & Li, 2018: 95). Shi (2019) names the inability to view the dance from multiple perspectives and a general difficulty of data reuse and editing as the disadvantages of traditional technology arguing for a better fit with motion capturing. These alternative viewing modes would give better understanding regarding practice and particular dance style(s) to the learner (cf. R. E. Cisneros et al., 2019: 6). One example of motion capture usage would be the capturing of the teacher’s dance motion, which could then be used to create a 3D web learning platform, where students can watch the recorded motions (Magenat-Thalmann, Protopsaltou & Kavakli, 2007 as cited in cf. Deng, Leung, Gu & Yang, 2011: 229). This would help in comparing

the contrast of two virtual images, resulting in a clearer differentiation between movements of the learner and a professional dancer (cf. Yi, 2018: 251).

Additionally to the pure motion capture systems a movement correction systems can be kept in mind, which task it is to remind students of inaccurate movements to help them correcting those (cf. L. Huang, 2019: 731). Furthermore it is said that "for students to know what they actually do, they need to improve the observation of their behaviour" (Doughty, Francksen, Huxley & Leach, 2008: 15). Thus it is beneficial for students to look at their own motion in eg. fast forward mode, to analyze their balance (cf. Doughty et al., 2008: 14).

Virtual Reality

Virtual Reality³ (VR) is another step into the direction of 3D application, in a more immersed way. On the student side Xu & Li (2018) argue that the designing of virtual partners can benefit beginners, as due to age characteristics of students, they are usually too nervous or ashamed to express themselves in front of their partners of the opposite sex, which can lead to stiff movements or embarrassment/ conflict in cooperation (cf. Xu & Li, 2018: 97). On the teacher's side VR provides a save space to learn, experience and reflect, where teachers can take risks and make mistakes without having a negative effect on students through a teacher trail and error process (Day & Macfarlane, 2017 as cited in cf. R. E. Cisneros et al., 2019: 6). Furthermore the usage of VR technology reduces the cost of practice teaching and deals with existing problems concerning time and space limitations in traditional practice teaching (cf. Yi, 2018: 250).

More than Technical

From 2016 till 2018 the European Commission founded under the European Union's Horizon 2020 Research and Innovation Action Programme the WhoLoDancE project which aimed to develop and apply "breakthrough technologies to dance learning to have a relevant impact on dance practitioners including researchers, professionals and dance students" (Rizzo et al., 2018: 42). What they showcased in the end was a framework of different solutions outlined in Figure 3.

Insert Figure 3 about here.

The WhoLoDancE project concluded that so far there is no widespread integration in the dance sector of their solution based on "the cost of technology, the need for appropriate technological

³Virtual Reality can be described as a reality illusion that is created by a computer system (cf. Christensson, 2006).



expertise and perhaps an understandable resistance to changing traditional methods of body-to-body interaction” (R. E. Cisneros et al., 2019: 16). This leads to the question what other requirements does a suitable solution have to incorporate apart from the major technological implementations. For the teaching platform ”Internet Plus” W. Yang (2019) highlights the need for concise language and animation. Furthermore the main information of the dance should be shown including the dance terminology, dance code and description, the total number of beats, dance sequence and a description of dance prelude. The ease of use, a multiplatform fluency and the possibility to evolve as the students capacity for use expands is another aspect to keep in mind (cf. Parrish, 2016: 175). Blackler et al. (2019) argue that a technology for dance (-based exercise) should require minimal setup routine, be easy to use and always available. Basically stating that such an application should be to the users convenience anytime and anywhere. Furthermore they advise the incorporation of weekly targets for learning dance steps, reminders to practice known steps, hints regarding posture and movement during complex dance moves and the forwarding of new music and dances to the user periodically (cf. Blackler et al., 2019: 22) to help in their dance process. R. E. Cisneros et al. (2019) announce that different viewing angles, close viewing strategies, ease of repetition and the ability to concentrate on single or multiple movements in technology solutions can enhance the autonomy of learning. Additionally to bring the technical solution to the everyday life of practitioners, the solution has to be affordable, portable and minimal intrusive (cf. Rizzo et al., 2018: 49; cf. R. E. Cisneros et al., 2019: 13) and a guide how to use the tools would be beneficial (cf. R. E. Cisneros et al., 2019: 14). Dias Pereira dos Santos (2017) argues that a solution allowing for massive adoption that is also cheap using smartphones, could be the best way to provide actionable feedback.



METHODS

Research Design

This research tries to answer the research aim about the usage of technology to heighten the learning process especially applied on the context of social dance. As this is a rather specific topic, a qualitative research method is chosen. So to concentrate on the uniqueness of the case and to develop a deep understanding of its complexity a case study is used (Bryman & Bell, 2011: 61). Bryman & Bell (cf. 2011: 60) outline, that it is difficult to determine whether a case study or cross-sectional research design is better suited for exclusively qualitative research. For this research a case study still seems to be better, as a cross-sectional design is known as nomothetic and the expected findings of this research are not expected to be applicable regardless of time and place (Bryman & Bell, 2011: 60).

Data Collection

Participants

Since this paper tries to gain information regarding social dance, it has to target people participating in this kind of activity. It has to be noted, that there are a lot of dances in all kind of form and variation (see Wikipedia (2020)), thus a distinction is necessary. Based on the definition by Wright (1992): "Social dance is essentially touch dancing and includes all forms of partner dancing done primarily for recreation or pleasure to a variety of musical styles", only participants are considered, who take part in the activity of partner dance. In this research it is furthermore seen as unnecessary to differentiate between the different types of partner dances, as it is assumed that all these contain the common complexities and challenges outlined in section "Dancing - Learning in General". Participants of differences in age, time in the field and leader or follower status are included, to have a great variety within the sample. Table 1 outlines the interviewees by their certain criterias without their private information, to keep them anonymised. The study is conducted in the city of Osnabrück, Germany. Therefore, all participants are associated with the dance circle of this city. A few participants were already handpicked while others were randomly chosen based on them fulfilling those criterias. This leads to a total amount of 17 candidates that were interviewed.

Insert Table 1 about here.

Interview

The research was conducted using semi-structured interviews. These started with a short introduction of the research, outlined in Figure 4, after the basic formalities were dealt with and ends with the closure in Figure 5.

Insert Figure 4 about here.

Insert Figure 5 about here.

These basic formalities included signing the consent form (see Figure 6) and the setup of audio-recording which was later used for interview transcribing.

Insert Figure 6 about here.

Inbetween the interview process is planned in a semi-structured way according to the general topic list, which is outlined in Figure 7. The first questions aimed to gather so called "facesheet" information, to contextualize the later given answers (cf. Bryman & Bell, 2011: 475). To help the interviewer in the interview process, a list of example question were prepared, where he could fall back to (see Figure 8).

Insert Figure 7 about here.

Insert Figure 8 about here.

As announced above, the interview ends with the closure in Figure 5, but not without giving the participant the chance to add anything else toward the discussion.



Data Evaluation

It seems necessary to use specific terms in the assessment of qualitative research quality compared to the reliability and validity terms of quantitative research, as qualitative research is often not about absolute truth, but can have more than one truth for the social world (Lincoln & Guba, 1985; Guba & Lincoln, 1994 as cited in cf. Bryman & Bell, 2011: 395). Therefore this research will also look into a few subcategories of trustworthiness proposed by Lincoln & Guba (1985) and Guba & Lincoln (1994):

Credibility

To ensure credibility this research used the concept of respondent validation, where the researcher presented the participants the opportunity to look at their interview and reconfirm that the result is congruent with their views. If there was an issue regarding this, the researcher looked into that area and inquired reason for this.

Transferability

Giving the fact that the sample size is already chosen to be quite diverse, to lead to a certain degree of transferability, it has to be noted that the size is still considered small and the scope is limited to one city in Germany.

Confirmability

It seems impossible to reach a state where the values of the researcher do not impact this research. The researcher nevertheless tried to ensure that his personal values do not compromise the findings, by reconfirming results with his interview partners.

Data Analysis

For the process after the data is collected and transcribed, this research follows a positivistic approach, such as propounded by Eisenhardt (1989), to come up with a generalizable proposition and build theory on top of this (cf. Bryman & Bell, 2011: 61). The theory model is build leaning onto an argument of 'prospective case study design' by Bitektine, who said that the development of hypotheses relates to an ongoing process, that has to be tested in the future and to be determined if the hypothesizes corresponded to the findings (Bitektine, 2008 as cited in cf. Bryman & Bell, 2011: 63). As this research tries to gain information how technology can influence the learning process in social dance, this and the effects that might follow for a sustainable happiness pursuit could be analyzed after the findings have been implemented and tested in the real world. To come



to these findings this study aligned with grounded theory and used a coding to organize the data and later came up with a framework out of these codified data relating how technological solution should work/look like to enhance the learning process of social dance.



RESULTS

The results of this research primarily aimed to find answers regarding the research question, but also showed results in aligned topics. While every participant gave an overview of their experience with technology regarding dance education and an outlook what they imagine beneficial, they also shared experience how they got started with dancing and what learning procedures they think most effective. These result will be included in this paper for the purpose of advice of structuring dance education, to presumably increase the outreach to potential prospects impacting toward a more sustainable happiness pursuit.

How Dancers start

Table 2 shows how the interviewees got interested in social dance and started their journey.

Insert Table 2 about here.

Most participants started dancing with a dance course either in high school or in university. They outlined that the high school dance course was mandatory in the sense that most classmates took it, having peer pressure leading to a big group taking these lessons. For university the answer lay in the offer of different dance classes in addition to the normal sport offers. Participants answered to arrive at the dance lessons either on random or convinced by a friend or a fellow student. Apart from these participants, other got started either because they liked the music or saw the dance somewhere and were amazed by the cool/ beautiful/ fluently look of it. The last part of participants noted that they just had too much time on hand, wanted to try something new or were in changing situation to begin with (eg. breakup).

Learning to Dance

On the questions regarding participant's experience with social dance the Table 3 shows the interviewees different statements.

Insert Table 3 about here.

After the initial interest was sparked, most participants started with a regular dance course, where a teacher showed figures in great detail and the students tried to repeat the movement while being corrected by the teacher. This perfectly complements the answers that, knowing the basics in and out is greatly beneficial even at a later stage.

Some participants argued aside from the standard courses for alternative learning procedures. Here they named the visualization of movement and figuring out on your own how things work, especially useful for followers. As interviewee 4 puts it: "The most efficient way to learn something might be to discover it completely freely [...]. Followers learn really well, if you just dance with them and then one time they discover what feels right and what does not". This is especially the case when one dances with multiple partners, like one can do at a party. The parties especially are a great resource to get inspired, dance with different people and experience their reaction on the own dance style. While some participants argued that this is a great way of feedback, 'others' outlined that different people might give different, possibly misleading advice.

Apart from the courses and parties some answered on the level of "self" practice. Here they said that the practice with friends is valuable especially when you are able to receive honest feedback. Furthermore the practice of body mobility is good to be able to pursue certain figures or to be able to follow these, when they are cued. This was also underlined as interviewees talked about the difficulties they've experienced in their dance education history.

These difficulties entail mobility as the most noted point. As in "Salsa" the coordination between hips, upper body and shoulders was outlined by one dance teacher to be often a new concept for beginners in the northern geography. Besides this aspect multiple points followed regarding complexity on the leaders side. Not only leader interviewees, but also interviewees that mainly dance as followers emphasized the difficulty of simultaneous tasks on the leaders side, that are: executing the own steps and arm movements, connecting figures, leading in a clear way and keeping the beat. Furthermore the remembering of complex figures, improvisation to music and partner, and to overcome the barriers to dance with a person, one is not familiar with, were answered by individuals regarding their difficulties.

Technology Assist

All interviewees already had experience with technology in dance education. The Table 4 lists the different types of technology participants used in their learning pursuit.

Insert Table 4 about here.



While nearly all interviewees had experience with services such as YouTube for figure research or Spotify for music playing, some named new aspects not named by others. Two outlined the use of a Bluetooth watch to control the music and not be forced to go back and forth between the player and the dance floor.

A few named technology in the use of communication and information gathering for social events. Here especially Facebook was named most of the time for having more accurate data on events.

Participant 1 answered to follow dance couples on Instagram, but to use their videos more as entertainment, than something else. He noted: "The problem with Instagram videos is that these are really bad for studying, because you can not stop, rewind or do anything".

Participant 9 added that the use of AR or VR might be a great way to learn figures, especially when the research in haptic feedback advances. This disadvantage was also noted by multiple other interviewees as the prospect of using AR/VR for social dance seemed interesting for most, but the learning effect being not worthwhile as of missing haptic feedback, thus not resembling social dancing.

In total nearly all participants said that they like the idea of technological improvement in dance education, but highlighted that it is always just a support factor and not able to replace traditional courses, based on multiple reasons. In live courses the teacher is better able to give feedback, or even able to dance with the student to feel the errors. Furthermore participant 4 outlined that "Dancing without the social aspect would presumably not spark as much enthusiasm [...]. [He] see[s] [Technology] as an addition [...], because the attendance courses are very, very important to get to know each other and to receive feedback and so on". Especially participant 12 words provide a good summary for the general position of the interviewees as he answered the question, how his attitude toward technology in dance education is: "If it helps, absolutely. In my eyes it is not about the technology, first and foremost it is about the dance and the music".

Technological Solution

On their wishlist participants came up with a wide variety of features a technological solution that helps in their dance education should entail. Table 5 shows the bundled results plus a category assigned by the researcher.

Insert Table 5 about here.



The feature that was most often named included a possible motion recognition that was compared with an existing dance figure outlining errors to improve on, shortly followed by the wish for a detailed presentation of figures in a clear and understandable way and a great collection of music suitable for the corresponding dance. The other points were mainly named by one or two interviewees only.

On the video category participants called for control mechanisms like slow motion play, a possible segmentation of video material, to make larger figures easier understandable and the ability to video chat with a personal trainer. This point was especially named by one beginner, as she valued the feedback by a teacher in a traditional dance course the highest.

Regarding dance figures interviewees called, aside from the movement recognition and correction, for an easy way to keep track of figures and a way to simulate movements between two bodies for teaching purpose. Participant 2 made a comparison to music, where notes are a great way to record music and said that: "for dancing there is no great presentation option, to show how two bodies move in one environment, as it happens with a figure".

While on the music category the wish for a great music selection domineered, there were also wishes for song recognition, control of the music's tempo and the possibility to help the user finding the beat by using a vibrating device included. Furthermore some interviewees named the wish to find music by certain taste and tempo and to be able to practice musicality in the sense of being able to identify patterns in the music like beats or breaks, to then be able to adjust their dance accordingly.

Under the social category the researcher categorized every feature request loosely related to the dance's social surrounding. While multiple participants just named the necessity of the community aspect, others explained in certain steps how this could be implemented. Participant 7 said that a help to find a dance partner on a similar level would be cool and participant 1 pushed the social media aspect of such a solution as he argued for the possibility to exchange with other dancers, post content and build groups. Others also named that they would like to share figures with other people and find information about ongoing events.

Further information participants found interesting to be included is background information about the dance. Here the origin of the dance, who dances it, where it is danced and how the vibe of dance is liked were information most asked for. On the general structure of such an application the interest in a structured learning plan with different dance styles included was often announced and some even wished for the sectioning of the dance's elements by their own preference, the type of dance and the dance's basic, must know and not so important steps. While some people were completely satisfied with less technological features or self-organizing themselves, others requested some kind of motivator to keep them immersed and an overview of their accomplishments and learning progressions also for the same point.



Participant 4 and 8 both had the idea of a solution that helps the user to loosen up or to relax, making him more brave to do mistakes, as mistakes are beneficial in the learning process, they've argued. As the last point some interviewees noticed that a technological solution should not be complex, but intuitive to deal with and accessible to limit the entry barrier and thus the acceptance of such an application.



DISCUSSION

To answer the research question "How should a technology solution be to have a positive impact on the learning of social dance?", this paper interviewed 17 people participating in social dance about their experiences and wishes concerning social dance education especially on the area of technology. Resulting in a framework for **social dance education** (SoDanEd), to see in Figure 9, this shows in three key areas how a technological solution should be build and what key features are ideally to be included.

Insert Figure 9 about here.

In these areas the results not only reflect the interviewees answers, but also align with existing theory. For example Nakamura et al. (2005) talked about the usage of vibration for finding the right timing, which aligns with the wish for having a beat practice and assist, based on the results of Table 5 point 18 and 22. And while theory as well as participants outlined diverse multiple solutions, for example Motion Capturing or VR as a feedback loop, the role of technology in dance education can still be debated. All interviewees of this research had positive opinions on the incorporation of technology, but under certain premises. Chan et al. (2010) named the reasons for a slight aversion as high costs and effort of familiarization, which are also points the interviews brought forward. Given that these barriers to technology are reduced, participants ruled in favor of a technological solution as supporting factor, while highlighting the importance of presence activities.

Conclusion

Under the term sustainable happiness by O'Brien it is argued that the change in peoples pursuit of happiness can lead to a more sustainable lifestyle. This research uses the premise that social dance, which highly correlates with happiness, is one activity suited for a sustainable happiness pursuit. As social dance needs to be learned first, this shows an entry barrier for new prospects. Based on existing research and interviews it was shown that certain key areas are needed to invest time in, notably the mastering of musical and motor skill (Côté-Laurence, 2000 as cited in cf. Dias Pereira dos Santos, 2017: 1). To ensure a most efficient progression, different learning methods are known from which the traditional course enrollment, in which a figure is shown by the teacher in great detail, then repeated by the student and afterwards corrected, is the by beginners most common and appreciated one. While some more advanced students preferred parties, because of a higher

inspiration ratio, they still aligned with the 'rest' on a favorably view toward technological support in social dance education. Some arguing for more intrusive options like AR/VR, 'others' satisfied with just enhancing the social coordination. Collecting these ideas the SoDanEd Framework outlines what features a solution should entail to best support students in their learning of social dance. Furthermore it also reflects the importance of recognizing abstract requirements. As outlined in section "More than Technical" the WhoLoDanceE Framework failed to bring their solution to the everyday life of practitioners, because it was not developed with such requirements in mind (cf. Rizzo et al., 2018: 49; cf. R. E. Cisneros et al., 2019: 13). The SoDanEd Framework on the other hand, while taking a more theoretical approach, includes such elements to enable a holistic view for the needs of such an application.

Limitations

While this research achieved data saturation even with a small sample size of 17, it has to be kept in mind, that the sample was geographically limited to one city in Germany, thus transferability can not be guaranteed. Another limitation regards the coding by only one researcher, which left the possibility of the researchers point of view effecting the results open.

Recommendations

By providing the SoDanEd Framework this research tries to show insight what practitioners of social dance expect a suitable solution to entail. While it has to be emphasized that there is no one one-size-fits-all solution, this research outlines a lot of different aspects developers can analyze to include or disregard in their creation of solutions for the social dance education market. Thus the whole Figure 9 is considered a recommendation for future application development in this specific area. The above mentioned analyze has great importance as some aspects are more significant than others and can prove fatal as seen in similar projects (eg. WhoLoDanceE).

Future Research

In future research rankings of the SoDanEd Framework's features could be outlined to provide more meaning to certain points. Furthermore, as this research holds the premise that an application developed on the basis of the SoDanEd Framework will have a positive impact on the learning of social dance, this has to be tested in the future (Bitektine, 2008 as cited in cf. Bryman & Bell, 2011: 63). Additionally this research argued for the more sustainable happiness pursuit in the form of dance. While the correlation between dance and happiness was already shown in section

”Happiness through Dancing” the direct link, if and to what degree a more sustainable happiness pursuit leads to a more sustainable lifestyle in general, is to be examined in future research.



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Figure 1: Online Learning Requirements (cf. Parrish, 2016: 170)

- a) an instructor who is clear and responsive
- b) encouragement, especially for new students who feel challenged and disconnected to an unfamiliar learning style
- c) relevancy to long-term and short-term goal of the student
- d) careful planning of a design interface
- e) layered communication methods
- f) collaborative and discovery-based activities

Figure 2: Online Learning Benefits

- a 24-hour access (Puteh, 2008)
- access and equity for individuals with disabilities and for students struggling with face-to-face instruction (Zhang & Bonk, 2009)
- learning at own pace, because of flexible course schedules (Puteh, 2008; Stavredes & Herder, 2014)
- the get together of students from diverse locations resulting in the sharing of ideas, viewpoints and perspectives (Simpson, 2012)
- reduction of instructional costs (Puteh, 2008)
- increase in personal responsibility for learning (Salmon, 2011)
- building of cross-disciplinary and cross-cultural learning environments (Bonk & Khoo, 2014; Zhang & Bonk, 2009)

Figure 3: WhoLoDancE Framework (cf. Rizzo et al., 2018: 46)

Movement Library a user can search this library by title, genre, annotations, performer, dance company and date of recording and create playlists. Furthermore the user can watch the video or the according captured 3D data, which is able to rotate on the users wish.

Movement Annotator enables the user to manually add annotations to performances

Segmentation Tool allows to separate a motion into simpler segments

Blending Engine is able to assemble sequences together, either in a linear setup or in parallel, where specific movements are picked (eg. leg movement of one, arm movement of another sequence)

Similarity Enging is able to find similar movements in the Movement Library based on an input movement recording

Choreomorphy enables the real-time-view of motion captured data through a 3D avatar

Low-end VR Platform allows the viewing of the 3D data within a VR environment

Sonification Tool is able to transform the captured dance movements into a sonification

Figure 4: Interview - Introduction

Right now I write my Masters thesis in Sustainable Entrepreneurship at the University of Groningen, Campus Fryslân. This research highly refers to dancing, which is why I asked you as one of my participants to be here today. Thank you for agreeing. With this research I want to contribute to the knowledge area, how technology might be able to improve the learning of social dancing. This also overshadows into other areas and you might have already wondered what Sustainable Entrepreneurship and dancing have to do with each other, but dancing is highly correlated with an increase in happiness. Something which you might also have experience with. There is a concept which is called sustainable happiness, that implies that we should rethink our pursuit of happiness to be more sustainable and not compromise on the environment, other people or future generations. I see social dancing here as a perfect fit, thus investigating here.

This Interview will be audio recorded, so I can later build my model on this and still have insight in what you've said. Therefore I need you to sign this consent form, which allows me to do this and informs you about the process a little more. Please read it before signing. One thing I like to highlight before we start, is that your data will be anonymised, therefore nobody but me will know that you gave the answers you gave here. I hope that this leads you to feel more at ease to speak freely. Do you have any questions before we start?

Then without further ado, let's begin:

Figure 5: Interview - Closure

Thank you for taking the time to talk to me. We have now reached the end of the interview. Is there anything you'd like to add, that was not previously said, or something you wish to highlight that was?

Ok, if you have any questions afterwards, feel free to reach out to me. At a later point you will also get access to your interview data, so you can check if everything you've said here today really aligns with your view, or if you want to change statements. Thanks again for participation. If you are interested in the final result I would also be more than happy to share this with you. Till then it will probably take a little more time. Around July I would say.



Figure 6: Informed Consent (Trinity College Dublin, 2020)

I understand that if I inform the researcher that myself or someone else is at risk of harm they may have to report this to the relevant authorities - they will discuss this with me first but may be required to report with or without my permission.

I understand that signed consent forms and original recordings will be retained in the possession of Julian Rörig until the 1st. of September 2020.

I understand that a transcript of my interview in which all identifying information has been removed will be retained.

I understand that a transcript of my interview will be presented to me for optional confirmation of recorded statements.

I understand that under freedom of information legalization I am entitled to access the information I have provided at any time while it is in storage as specified above.

I understand that I am free to contact any of the people involved in the research to seek further clarification and information.

Names, degrees, affiliations and contact details of researchers (and academic supervisors when relevant).

Signature of research participant

Signature of participant

Date

Signature of researcher

I believe the participant is giving informed consent to participate in this study

12.05.2020

Date

Signature of researcher

Interview
Happiness, Dance and Technology
Consent to take part in research

- I..... voluntarily agree to participate in this research study.
- I understand that even if I agree to participate now, I can withdraw at any time or refuse to answer any question without any consequences of any kind.
- I understand that I can withdraw permission to use data from my interview within two weeks after the interview, in which case the material will be deleted.
- I understand that participation involves taking part in a scheduled interview.
- I understand that I will not benefit directly from participating in this research.
- I agree to my interview being recorded.
- I understand that all information I provide for this study will be treated confidentially.
- I understand that in any report on the results of this research my identity will remain anonymous. This will be done by changing my name and disguising any details of my interview which may reveal my identity or the identity of people I speak about.
- I understand that disguised extracts from my interview may be quoted.



Figure 7: Interview - Topic List

- A) introduction of the participant
- B) general information about the participants dance experience
- C) types of problems or struggles in the learning process
- D) general information about technology usage
- E) experience with technology for dance education
- F) opinion on technology for dance education
- G) wishes on technology for dance education

Figure 8: Interview - Example Questions

- A) introduction of the participant
 - Would you first introduce yourself for the recording, that does not know you?
 - What is your: (name, gender, age, etc.) ?
- B) general information about the participants dance experience
 - Tell me a little bit about your dancing experience so far.
 - How do you normally learn a dance?
 - Do you learn mostly on your own, at parties, in classes, etc.?
- C) types of problems or struggles in the learning process
 - You said you dance since x years. Did you ever encounter setbacks/struggles in your learning process?
 - Do you still take dance lessons? Why; Why not?
- D) general information about technology usage
 - Would you consider yourself a digital native?
 - How would you rank your familiarity with technology (1-10)?
- E) experience with technology for dance education
 - Did you ever incorporate technology into your learning process one way or another?
- F) opinion on technology for dance education
 - What do you think of the usage of technology for dance education?
- G) wishes on technology for dance education
 - If you snap your finger and have your ideal version of a solution that enhances dance education on your phone, what would and should it do?
 - Presentation of WhoLoDancE -> does that inspire your App Idea?

Figure 9: SoDanEd Framework

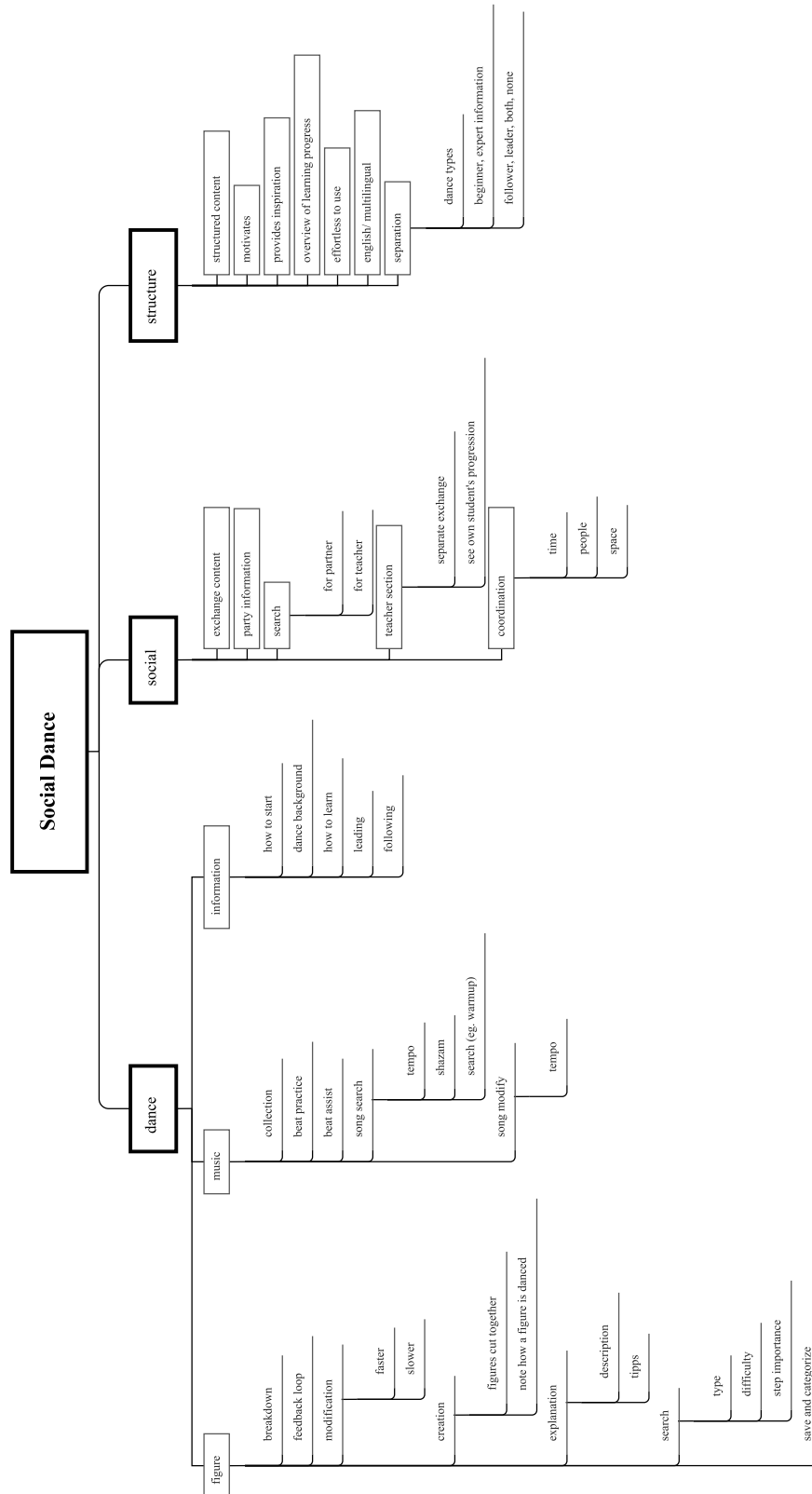


Table 1: Participants

participant	gender	age ¹	experience in social dance ²	teaches (professional)	different social dance styles ³
#1	♂	-		✗	
#2	♂	-		✗	
#3	♀	+		✓	
#4	♂	-		✓	
#5	♂	+		✗	
#6	♀	-		✗	
#7	♀	-		✓	
#8	♂	-		✗	
#9	♂	-		✗	
#10	♀	-		✗	
#11	♂	-		✗	
#12	♂	+		✓	
#13	♂	+		✓	
#14	♀	-		✗	
#15	♂	+		✗	
#16	♀	-		✗	
#17	♀	-		✗	

¹ + - >= 30

- - < 30

² - no dance experience

- < 3 month

- < 1.5 years

- < 3 years

- >= 3 years

³ - 0 styles

- 1 style

- 2-3 styles

- 4-5 styles

- > 5 styles



Table 2: Dance Begin

#	why dance
1	uni sport
2	high school dance course
3	advertised by a friend
4	random
5	dance looked cool/ beautiful/ fluently
6	liked the music
7	try new things
8	change in normal life (breakup)
9	too much time
10	practice the language of the native dancers
11	introduced on holiday

Table 3: Learning Experience

#	progress	statement
1	learning	repetition is crucial
2	learning	someone shows the figure in great detail
3	learning	dance courses
4	learning	honest feedback holds great value
5	learning	visualize movements helps
6	learning	practice (with friends)
7	learning	to figure out things on your own can be beneficial
8	learning	first the basics
9	learning	practice mobility /warm up
10	learning	seeing other people inspires (party)
11	learning	leader have multiple responsibilities (eg. rhythm, leading, own arms and steps)
12	learning	it helps to dance with the teacher
13	learning	have to like the music
14	learning	dancing both roles helps in understanding
15	difficulty	mobility
16	difficulty	to connect figures is hard
17	difficulty	for leader the coordination of different tasks (leading, own steps) is hard
18	difficulty	to overcome the barriers to dance with a person, you are not familiar with yet
19	difficulty	remember complex figures
20	difficulty	complex figures are hard
21	difficulty	getting the tempo right
22	difficulty	getting to a right rhythmic body movement
23	difficulty	improvisation on the music and partner
24	difficulty	not good enough for parties
25	difficulty	at parties different people give different (misleading) advice
26	difficulty	coordination between hips, upper body and shoulders

Table 4: Technology Experience

#	categories	technology
1	music	bluetooth watch to controll music
2	music	Music from Spotify or YouTube
3	inspiration	Intagram Videos
4	information	Online Forums
5	information	Information about Partys (Facebook)
6	information	Internet to research information
7	dance figures	online courses
8	dance figures	YouTube
9	dance figures	AR/VR
10	dance figures	Motion Tracking
11	communication	Coordination regarding partner, locations, time

Table 5: Features

#	category	idea
1	video	video segmentation
2	video	slow motion
3	video	video chats with a personal trainer
4	socials	infos about events
5	socials	share figures with other people
6	socials	community aspect necessary
7	socials	social media aspects (exchange, posting content, group building)
8	socials	help to find a dance partner and teacher
9	structure	different dance styles included
10	structure	overview of accomplishments/ learning progression of yourself or students
11	structure	structured learn plan
12	structure	dance background info
13	structure	sectioning of dances (own preference, type, difficulty, basic/ must know steps)
14	structure	motivator
15	structure	gives inspiration
16	structure	not too much input for beginners
17	music	great music collection for dance
18	music	musicality practice
19	music	song recognition (eg. Shazam)
20	music	find music by taste and tempo
21	music	set the musics tempo
22	music	help to keep the beat by vibration
23	meta	intuitive and accessible technic
24	meta	help to loosen up/ to relax
25	figure	detailed figures, shown in a clear way
26	figure	simulation that shows how figures are danced together
27	figure	movement recognition
28	figure	movement correction outline
29	figure	write down figures in an easy way
30	figure	record learned figures and categorize them