Pre-Service Teacher Trainees' Textile Literacy

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Abstract: In an era of consumerism, unsustainable clothing consumption is becoming an essential problem. Problems are related to extensive use of raw materials, energy, water, and labour. There are also bottlenecks with used chemicals in production and labour exploitation issues. Home economics subjects deal with concerns related to textile topics and try to raise awareness of sustainable consumption of textile products. Particularly important is to educate people to have the right knowledge and skills to behave sustainably. The aim of the study was to find out the extent of pre-service teacher trainee's knowledge on textile topics and to research their behaviour in consumer process. In the pilot study, 69 home economics students participated. The research survey was designed to measure the teacher trainee's textile literacy. The results indicate problems in the field of theoretical knowledge as well as in terms of sustainable behaviour in the entire chain from purchase to disposal of textiles.

Keywords: in trainee teacher, sustainability, textile, university education.

Introduction

Along with the increasing demand for textile products, the negative effects on the environment are also growing (Allwood et al., 2006). According to environmental issues, the textile industry is also facing allegations of poor working conditions, low pay, women, and children work; the most common problem of workers in textile industry is burnout (Mukherjee, 2015). Textile production is a complex process in which critical points exist from the production of textile fibres to the disposal of textile products. It is estimated that 8-10 % of the world greenhouse gas emissions and 20 % of industrial wastewater are due to the textile industry (The UN Alliance…, 2020). When buying a textile product, colour is the main decision factor for most consumers (Kant, 2012). However, synthetic dyes are a significant environmental problem; more than 8,000 chemicals are used for dyeing, many of them are toxic and can endanger human health (Nimkar, 2018). The problem of textile wastewater is not only the fact that in the dyeing process 20 % of the dyes used remain in the effluent (Chequer et al., 2013) but also the fact that the effluent has a high temperature and pH value (Kant, 2012).

In addition to high water consumption and the use of toxic chemicals, the main environmental issues facing the textile industry also include the issue of greenhouse gas emissions and textile waste (Allwood et al., 2006). P.S. Norum (2013) stated that 49.5 % of all discarded household items are textiles. Growing amounts of textile waste are also due to the fast fashion phenomenon which is often labelled as "disposable fashion". Fast fashion is characterized by giving consumers access to trendy, low-cost clothing with a short sales cycle (Morgan, Birtwistle, 2009) which particularly suits young people who don't have a lot of money and want to follow fashion trends. Therefore, young people tend to buy a larger number of cheap, low-quality clothes that they will only wear for a short time and throw away quickly (Koklič, Dmitrović, Gorše…, 2019). This can be a problem, because buying habits are often maintained into adulthood (Magie, 2008).

In response to the harmful effects of fast fashion, the idea of slow fashion emerged. Slow fashion follows the philosophy from cradle to cradle - creating products that at the end of their life become ingredients or raw materials for other products (Fajt, 2014); it aims to slow down the production of clothing by improving the manufacturing process and to encourage awareness, promotion of responsibility and sustainability in the textile industry (Pookulangara, Shepard, 2013). Slow fashion includes consumer education to buy less but aim to buy better quality clothing. While there is no more value in having instantly new items, less ecological unfriendly materials can be used in the manufacturing process, production can be slower, work is more friendly for workers and waste problems reduced (Jung, Jin, 2014).

Today, many researchers are trying to improve textile production. M. Roy, P. Sen and P. Pal (2020) focused on identifying the critical environmentally conscious manufacturing indicators and proposed

technical solutions to reduction of waste, carbon dioxide emissions, nitrogen oxides, energy consumption and to ensure better occupational health. M. Rahman working together with colleagues emphasized the importance of the application of biotechnology in the field of textiles as an environmentally sustainable alternative (Rahman, Billach, Hack-Polay, 2020).

Very interesting niche, based on new technology transfer from research institutions (medicine, engineering) to textile industry, is micro-segment of smart textiles. *"Smart textiles find applications and have outstanding outlooks almost in every sphere of human activities"* (Mečņika et al., 2014, 150).

So-called organic clothing emerging on the market today is made with the help of eco technologies, using natural dyes and recyclable materials, without the use of pesticides and insecticides (Eryuruk, 2012). It reduces the ecological footprint and increases the participation of the textile industry in sustainability (Fu, Kim, 2019).

The consumer has so many choices on the market today. In the purchasing decision, they also decide for or against sustainability by their choice. Labels on textile products help the consumer when buying textiles. A study by Environmental Research Associates found that approximately 10 percent of adults' search for environmental information on labels and that the susceptibility to search for environmental information varies with gender and age (COPE Council on…, 1996).

Various research (Oskamp et al., 1991; Butler, Francis, 1997; Connell, 2010) showed that consumers are concerned about the environment, but their views are not necessarily reflected in sustainable consumption. The J.D. Hines' and M.E Swinker' (1996) survey showed that consumers in principle would be willing to pay 10 % more for a sustainable product. However, when, for research purposes, the survey participants were exposed to price increases of sustainable products, half of the participants indicated that they would prefer to buy a cheaper product – regardless of the environmental impact.

In addition to choosing and buying clothes, consumers' attitudes towards clothing also include the use and maintenance of clothing. How well consumers understand and follow the maintenance instructions on the garment label determines their lifetime (McLaren et al., 2015).

Given the role that textile management plays in the context of sustainability, it makes sense to start developing textile literacy in primary schools. To my knowledge, there is no clear definition of textile literacy in the literature for the purpose of the present research, textile literacy was considered as all knowledge, attitudes and behaviour of an individual in authentic life situations related to textile content. The textile literate person thus has the appropriate textile knowledge, positive attitudes towards the implementation of knowledge/good practices in daily routine and realizes their knowledge and intentions in everyday life through sustainable behaviour - in three main areas: planning/purchasing, textile maintenance/care, and textile disposal/recycling. In education, the teacher's knowledge and attitudes on the subject are essential for effective knowledge transfer.

The main research question was: What are the critical points in terms of pre-service trainee teacher textile literacy in the area of knowledge and behaviour?

Methodology

In the study, what was carried out in the Faculty of Education, 69 home economics teacher trainees were participated (86.2 % of all home economics teacher trainee students) aged from 18 to 25 (M= 21,23; SD =1.840), where 94.1 % were female and 5.9 % male. The research survey was designed to measure the teacher trainee's textile literacy. The question was closed (with one exception); for measurement of purchasing behaviour and attitudes the Likert scale was used. Descriptive statistics was carried out with statistical program SPSS 20.

Results and Discussion

Teacher trainees' theoretical knowledge

Research has shown that many substances used in the textile industry are dangerous to health; they impact on reproduction, carcinogenicity, mutagenicity, endocrine disruptors (Nimkar, 2018). These chemicals can be released during wear and washing (Žurga, Tavčer, 2013) but the impact on users has

not yet been sufficiently studied (Poljanšek et al., 2018). However, it is important that the consumer behaves self-protectively, knows the possible risks and acts prudently.

When asked whether chemical substances could be present in textile products, 79.4 % respondents answered yes. The respondent stated that textiles may contain azo-days (38.2 %), pesticides (25 %), formaldehyde (25 %), nanoparticles (23.5 %), PFC (22.1 %) and phthalates (13.2 %). Respondents were also asked to write 3 chemicals they think have a negative impact on health. On this question only 39.7 % of trainees answered. The most often mentioned were dyes (70.3 %), followed by pesticides (33.3 %), formaldehyde (23.5 %), nanoparticles (18.5 %), chlorine (14.8 %) and phthalates (11.1 %). 91.2 % of respondents know that dyes can cause allergies. 64.2 % of respondents know the recommendation that the product should be washed before wearing.

The trainees were also asked on the information that must be provided on the textile labels, knowledge of maintenance symbols and labels to ensure consumer health was checked. The legislation stipulates that the raw material composition is mandatory, and that the raw material composition must be indicated in the local language (Označevanje tekstila…, 2020). Only one respondent correctly answered that the raw material composition on textile label is mandatory by law, 44.1 % knows that raw material composition must be in the native language. Maintenance labels for textile products help consumers to take appropriate care of the products. Most of the respondents correctly named the labels for ironing (100 %) and washing (97 %), slightly more than half of the respondents correctly named the label for whiter (58.8 %) and less than one quarter of the respondents correctly named the label for drying (23.5 %) and professional care (17.6 %). 66.2 % respondents correctly identified the labels to ensure consumer health. 79.1 % of the respondents knew that textile waste is one of the fastest growing waste groups. The results revealed that participants have poor knowledge on chemical substances that could be present in textile products. Better is the knowledge on labelling and textile maintenance.

Teacher trainees' consumer behaviour

The results revealed that most of our participants in the survey (61.8 %) take a shopping bag with them when they go out to buy textile products, but they are not sufficiently aware of information on the textile products – less than half read the information on the pendant (41.2 %) and less than a quarter of trainees pay attention to quality signs. When buying textile most of them (83.8 %) do not even think about how they will dispose of the garment when they stop using it. (Table 1).

Table 1

Teacher trainees' consumer behaviour – attention to information on the pendant quality marks and disposal

Statement	I do not agree %	I do not know %	I agree %	M	SD
I take a shopping bag with me when I go out to buy a textile product.	16.1	22.1	61.8	3.81	1.352
When buying textile products, I read the information on the pendant.	25	33.8	41.2	3.22	1.077
When buying, I pay attention to symbols that guarantee the quality and health of consumers.	48.5	29.4	22.1	2.62	1.051
When buying a textile product, I think about how I will take care of disposing it when I stop using it.	83.8	8.8	7.4	1.84	0.924

The results also showed (Table 2) that the trainees most agreed with the statement that price is most important when buying (48.6 %). Slightly less trainee teachers (48.5 %) agreed that they will buy the product they like although they already have enough clothes. Almost half of surveyed trainees (47.1 %) also stated that they prefer to buy clothing that is cheaper than more expensive clothes. Almost 40.0% of surveyed trainees stated that more cheaper clothes allow them more fashion combinations. The results also showed that 41.2 % of trainees agreed that they will buy textile products even though they may be less environmentally friendly than what they would like. Research showed that 42.6 % of trainees do

not know if there are sufficient organic products on the market. Results also suggest that participants are not aware of the impact that fashion has on them.

Table 2

Teacher trainees' consumer behaviour - price, fashion and sustainability

Statement	I do not agree %	I do not know %	I agree %	M	SD
The most important factor when buying a textile product is the price.	19.1	32.4	48.6	3.37	1.021
I prefer to buy clothing that is cheaper rather than buying slightly more expensive clothing.	19.1	33.8	47.1	3.35	1.019
If I like the product, I will buy it although I already have enough clothes.	30.9	20.6	48.5	3.21	1.216
More cheaper clothes allow me more fashion combinations, so I prefer to buy cheaper clothes.	25	35.3	39.7	3.16	1.060
If I like a textile product, I will buy it even though it may be less environmentally friendly.	29.4	29.4	41.2	3.15	1.149
The most important factor when buying a textile product is fashion.	35.3	36.8	27.9	2.81	1.110
There are sufficient affordable organic textiles on the market.	33.8	42.6	23.5	2.87	1.006

The results revealed that 47.1 % of trainee teachers agreed that they are wise consumers, 44.1 % was undecided.

Teacher trainees' maintenance and care

The results showed that 31.4 % trainees agreed that they wear clothes mainly made of artificial fibres, 41.8 % of the participants do not know. Most (89.7 %) respondents stated that they always washed the new textile products before wearing it, but only 33.9 % of trainee teachers stated that they wear all clothes they buy.

Teacher trainees' habits of textile disposal and recycling

According to E. Fajt (2014) the main problems of fast fashion apart from cheap labour, poor working conditions, excessive energy consumption, release of heavy metals and chemicals that are dangerous to nature and humans are growing amount of textile waste. The participants were asked what they do with old textile products. Most respondents answered that they would give them away (76.5 %) or take them to a collection centre (73.5 %). Minority would burn them (1.5 %), throw them in a mixed waste bin (2.9 %), sell them (8.8 %), recycle 2.9 %) or use them for cleaning (1.5 %). Less than half (42.6 %) of the trainees agreed that buying textiles at used clothing stores is a good solution for reducing textile waste. 69.1 % of participants would recycle old textiles if they could (Table 3).

Table 3

Attention to recycling and buying used textiles

Statement	I do not agree %	I do not know %	I agree %	M	SD
I would recycle old textile products if I could.	13.3	17.6	69.1	3.88	1.216
Buying textiles at second-hand clothing stores is a good solution for reducing textile waste.	23.5	33.8	42.6	4.16	0.857

Despite the small sample, the results suggest critical points in textile literacy. More should be done not only in the field of dissemination of theoretical knowledge but also in the field of consumer awareness, giving concrete ideas for maintenance and care of textiles and also in the field of giving concrete ideas of recycling and overcoming prejudices about used clothes.

Conclusions

The results of the present research on pre-service teacher trainees' textile literacy suggest that:
- participants' theoretical knowledge on the topic of textiles is not optimal,
- fashion impacts participants when making purchasing decisions (buying more cheaper clothes to have more fashion combinations),
- during the buying process, trainees are not sufficiently aware of the labels attached to clothing,
- when buying a textile product, they do not think of how to dispose of the clothes,
- only 33.9 % of the trainees wear all clothes they have,
- participants are willing to recycle old textiles, but they do not have enough knowledge to do it.

Research has shown weaknesses in teacher trainees' textile literacy (both in knowledge and behaviour). Results suggest that more different teaching strategies should be used in the education process to promote and educate on the importance of textile topics in line to follow sustainable behaviour in everyday life. A good starting point could be the combination of practical work with modern information and communication technology. Future teachers should, through study, get a variety of ideas and teaching tools to competently teach textile topics in the context of sustainability.

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