USING STATISTICAL DATASETS FOR DESCRIBING POVERTY AND INCOME INEQUALITY

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Understanding a social phenomenon such as poverty has a key importance for students in the field of economic education. At the same time, attracting and keeping the attention of Generation Y university students is difficult nowadays. Members of Generation Y need technology oriented, team work based, entertaining and visualization based tasks in class. The present paper develops a lesson plan considered useful and interesting for students in the topic of poverty and income inequality. First, the features of Generation Y are listed; then, the experiences about a previously held seminar in the topic of poverty and income inequality and the applicable statistical databases are evaluated. Drawing on the results, the main points of a proposed lesson plan are described.

INTRODUCTION

Poverty and income inequality are two different concepts; however, in numerous databases (e.g. in Eurostat, OECD Stats, Gapminder) they appear together in describing social conditions. The examination of poverty and income inequality is essential, due to their negative impacts on our lives. Poverty and income inequality can lead to a widening gap between the rich and the poor, may reduce people's opportunities to study and can have negative effects on people's health (Keeley 2015). Moreover, the way of defining and measuring the two concepts is also debated, since there are numerous indicators for measuring poverty and income inequality. Absolute (e.g. a dollar a day) and relative measures (e.g. ratio of those who live below a poverty line) may be done to describe poverty, and there are several other methods (e.g. income quintile share ratio, Gini coefficient) to measure income inequalities (Banerjee, et al. 2006, Keeley 2015, Ibrahima 2013).

Due to the serious impacts and the measurement difficulties of poverty and income inequality, it is very important to deal with these phenomena in university classes, too. These classes aim to provide a general view on the current situation about poverty and income inequality, at the same time revealing that there are numerous indicators for describing the mentioned phenomena. The majority of students who are currently studying at universities in Hungary are members of the Generation Y (Garai, et al. 2014). There are numerous definitions of Generation Y based on the date of birth, but in most cases those born between the mid 1980's and 2000 are considered the members of Generation Y (Weiler 2005, Eckleberry-Hunt & Tucciarone 2011, Reilly 2012, Sox, et al. 2014).

Members of Generation Y share common characteristics (Weiler 2005, Eckleberry-Hunt & Tucciarone 2011, Reilly 2012, Sox, et al. 2014). They are believed to be the most technologically literate generation; they have never experienced life without computers or the Internet. Connectedness is also a common feature of Generation Y; they prefer belonging to communities. Therefore, the opinion of others (e.g. friends or schoolmates) is crucial for them, and members of Generation Y are feedback-dependent. They are entertainment driven; they enjoy having fun and playing games in every field of life. However, due to the technological age, members of Generation Y read less than the previous generations. Reilly (2012) calls them as "screenagers", because they are more visual than textual.

The features of Generation Y also affect teaching issues (Eckleberry-Hunt & Tucciarone 2011, Reilly 2012):

- As a result of technological literacy, paper and pencil based teaching methods are not effective for them: they are eager to use technology during the classes and they wish to get information on the current lecture topic with the help of the newest technological devices.
- Due to the fact that they like to be connected, they prefer to work in teams and want to get frequent and immediate feedbacks from classmates and teachers.
- They are entertainment driven, which means that they easily start to get bored. They need interesting topics, challenging tasks, enjoyable presentations and games in class.

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- They read less and less, and prefer visually attractive materials. Therefore, teachers should avoid materials with pure texts and numbers, and use visual illustration or animated elements instead.

The impact of Generation Y on teaching methods is challenging for higher education. Nonetheless, these challenges can enhance the development of teaching materials. Considering the significance of teaching poverty and income inequality as social phenomena and the teaching challenges for Generation Y, this paper develops a lesson plan considered useful and interesting for the students in the topic of poverty and income inequality.

BACKGROUND OF DEVELOPING THE LESSON PLAN

In order to develop a lesson plan, already existing teaching materials are used. The concepts of poverty and income inequality have already occurred in one of the courses; therefore, the experiences of the previous course are described at first. Then possible development options are discussed based on past experiences.

Previous experiences

At the University of Szeged, Faculty of Economics and Business Administration (Hungary), a new master level training program was launched in autumn 2014, available for both Hungarian and international students. The programme is called International Economy and Business Master Program, including the Economic- and Social Statistics course in its curriculum. The Economic- and Social Statistics course was first held in spring 2015; the current semester (spring 2016) is the second time the students can apply for the course.

The aim of the course Economic- and Social Statistics is to develop an ability to identify and collect the relevant statistical data sources for economic and social analysis in national and international contexts. The course consists of a lecture and a seminar part. A lecturer colleague held the lectures which focused on introducing the system of official statistics (main topics, structure, data collection, main concepts). Holding the seminar part was my responsibility, where the focus was put on understanding data and concepts, as well as on using the database introduced in the course of the lectures. Course achievement is evaluated by two mid-term exams and a presentation in an economic- or social statistics topic held by each student. In spring 2015, 17 students (16 Hungarian students, 1 Italian student) took part, while in spring 2016, 29 students (21 Hungarian students, 8 international students) are registered for the course.

In the following paragraphs, I reflect my experiences as the lecturer of the seminar part of the course. The seminar was held after the lecture, so students had already heard a presentation about the main concepts, definitions and indicators (e.g. income quintile share ratio, Gini coefficient, Lorenz curve, poverty line, poverty rate, poverty gap). At the beginning of the seminars, there was an overview about the usage of some databases in the topic of poverty and income inequality. Poverty and income inequality data were shown on the websites of Hungarian Central Statistical Office (HCSO), Eurostat, Organisation for Economic Co-operation and Development (OECD) and Gapminder. In spring 2015, the seminars were held in a classroom which only had a computer for the instructor. Thus, the instructor was able to show the usage of databases and students were able to follow the demonstration and mark their notes on paper – which was not an advantageous situation once the purpose was to teach how to use databases. During the course of the class, students received three paper based tasks with calculations to solve (e.g. Calculate the Gini coefficient from the following income data). The aim of the paper based calculations was to make students understand how to calculate the main indicators (Gini coefficient, income quintile share ratio, poverty rate, poverty gap).

It is interpreted as a positive result that students took notes, listened to the seminar and were able to solve tasks during the mid-term exam, also were able to search for and analyze data during the presentation. Nonetheless, some problems occurred during and after the seminar:

- The classroom was not equipped with student computers. Learning of using databases can be more effective and enjoyable in seminars if students have the possibility to practice on their computers, instead of only watching what the instructor does. More focus on using online statistical databases is very important for technology oriented members of Generation Y.

- There was no teamwork during the seminar. Students either followed the instructor or solved tasks independently; however, belonging to a group or working in a group is also important for Generation Y members.
- Students behaved politely during the seminar, although I perceived that some of them started to get bored while doing paper based tasks. It manifested in their facial expressions and in using smartphones for other than learning purposes during the seminar. More enjoyable tasks (e.g. presenting animated visual elements) may grasp the attention of the members of Generation Y. A switch in focus from task solving to database usage may also be useful, since Generation Y members are more visual than textual.

Based on the problems listed, the aim of a future seminar is basically the same as originally intended: to understand data and concepts, as well as to learn how to use database in the topic of poverty and income inequality. However, the tools for achieving this aim have to be altered:

- The usage of databases should be better highlighted instead of solving paper based tasks. Either the seminar should be held in a classroom equipped with computers, or the students should be allowed to use their IT devices (laptops, tablets and smartphones) in class. In this case, the students' need for using technology and visualization can be met to a greater extent.
- After the instructor demonstrates the usage of the main databases, students complete tasks in teams. In this case, their need for belonging to a group and doing entertaining tasks will be met.

However, there are several opportunities for introducing statistical databases as well. Which one shall we focus on? On the one which fits better to the needs of Generation Y. The following section evaluates the options for introducing statistical databases in describing poverty and income inequality.

Database options

In the seminar held in spring 2015, HCSO, Eurostat, OECD and Gapminder were introduced as databases. In the seminar held in spring 2016, due to the lower ratio of Hungarian students, introducing the website of the HCSO might not be so relevant. Instead, focusing on databases of international organizations is of more use. Therefore, statistical databases and the tools of Eurostat, OECD and Gapminder are presented.

Members of Generation Y have a need for technology, team working, dealing with entertaining tasks and receiving information visually. The need for technology can be satisfied by focusing on the usage of databases during the seminar. The team working potential does not really concern databases; however, the possibility to download data, use several indicators or get access to the definitions of poverty and inequality indicators may foster team working. The entertainment and visualization potential can also contribute to the evaluation of databases. Based on the needs of Generation Y and the possibility of detailed description of poverty and income inequality, the following aspects can be evaluated in the case of databases: potential for downloading data, number of available indicators, availability of definitions, potential for enjoyable tasks and potential for applying visualization tools. The evaluation of databases is subjective, but may serve as a good starting point for developing a lesson plan.

Table 1 Comparison of statistical databases

	Database	Potential for downloading data	Number of available indicators	Availability of definitions	Potential for enjoyable tasks	Potential for applying visualization tools
Eurostat	Database (Database and tables by themes)	Yes	Wide	Yes	Lower	Possible, but only graphs and maps
	Visualization tools (e.g. My country in a bubble, Quality of life)	No	Narrower	No	Higher	Possible, dynamic, less options
	OECD.Stat	Yes	Wide	Yes	Lower	Possible, but only graphs
	Gapminder	Yes	Narrower	Yes	Higher	Possible dynamic, more options

Table 1 presents the results of a comparison between the examined databases (the web address of databases can be found among references). Eurostat Database and OECD Stat include a wide range of indicators, data are downloadable and definitions are available. However, there are only few possibilities for applying visualization tools. Eurostat offers only graphs and maps, but there is no dynamic (animated) feature of these graphs and maps. OECD Stats has only graphs, but its dynamic feature shows only temporal changes. Due to the fewer dynamic features, Eurostat Database and OECD Stat can have lower potential to provide enjoyable tasks for students.

The Eurostat Visualization Tools include very spectacular and dynamic elements; therefore, they are more attractive and enjoyable for students. However, there is no option for downloading data or reading about the definitions, and the number of available indicators concerning the topic of poverty and income inequality is fewer compared to Eurostat Databases or to OECD Stat.

Gapminder is also a very spectacular dynamic visualization tool, so it is easy to find delightful and stimulating tasks for students. It is possible to download data and to reach the definitions of the indicators. There is only one drawback: the number of available indicators in the topic of poverty and income inequality is lower compared to Eurostat Databases or to OECD Stat.

Based on the comparison of positive and negative features of the examined databases, it may be concluded that Gapminder has the most potentials from the point of view of teaching Generation Y. It means that there is a need to apply other databases (Eurostat, OECD Stat) as well in describing poverty and income inequality; however, the usage of Gapminder should be in the focus of such a class. After reviewing the applicable databases, the main elements of the lesson plan are described.

DESCRIPTION OF THE LESSON PLAN

The aim of the lesson is to understand data and concepts in poverty and income inequality and to learn how to use database in the examined topic. Considering the features of Generation Y and the results of the comparison of statistical databases, instead of paper based calculations the usage of databases is suggested. It is important to introduce several different databases, but the usage of Gapminder should take up most of the class.

The lesson is split into four parts. In the *first quarter* of the lesson, Eurostat Database and OECD Stat are introduced. The lecturer presents

- where to find poverty and income inequality data,
- where to find the meaning of the indicators,
- how to download data,
- how to create graphs and maps,

- how to use the Eurostat Visualization Tools (e.g. My country in a bubble, Quality of life). This should be a brief summary, because there are no/fewer indicators for measuring poverty and income inequality; nonetheless, students may find the animated tools engaging.

The *second quarter* of the lesson focuses on the usage of Gapminder. The lecturer reviews

- built-in visualizations in the topic of poverty and income inequality (e.g. Yes, most billionaires live in the US or Wealth & Health of Nations), which may rise students' interest in the Gapminder and can be an enjoyable part in the lesson. At this point, the results seen in visualization (e.g. Which countries are rich? Where is higher income inequality?) are discussed.
- options of visualization (axes/indicators, play button, speed of visualization, chart/map view, country selection, other options)
- data in Gapminder World, where indicators can be searched by topic and the definitions of indicators are also available
- creation of a not built-in visualization e.g.: examining the relationship between poverty (ratio of people below 2$ a day) and food supply.

The *third quarter* of the class includes independent work in teams. Depending on the number of students, 3 or 6 teams are formed. Each team receives a question or should raise a question themselves, e.g.: What kind of indicators can be connected to poverty (ratio of people below 2$ a day) in Africa? What kind of indicators can be connected to income inequality index (Gini) in South-America? What kind of indicators can be connected to the income share of the poorest 10% of the population? How did poverty (ratio of people below 2$ a day) change in Europe? The questions have to be answered with the help of Gapminder, but the use of other databases (Eurostat, OECD Stat) is also allowed.

The teams present their results in the *fourth quarter* of the lesson, when the other teams and the instructor evaluate and give feedback about the work of each team. In course of the lesson, the needs of Generation Y (technology orientation, teamwork, feedbacks, entertainment, openness for visualization tools) are met at the same time providing them with an introduction into the main concepts of poverty and income inequality and into the usage of Gapminder.

The duration of each quarter is depending on the time limit available: more scenarios are suggested. University lectures and seminars hold usually 90 minutes long in Hungary. Based on that information, the total length of the lesson in *scenario one* is 90 minutes. In that case, quarter one and quarter two is a very short introduction to the usage of databases with the duration of 20-20 minutes; and the team work (quarter three) would be also a 20 minutes long smaller task. The rest 30 minutes is for the presentation and discussion of the team work. However, a 90 minutes long period is a very short time to accomplish the lesson plan described above. Therefore *scenario two* consists of two 90 minutes long blocks. In that case, each quarters' length are 45 minutes. Moreover, scenarios are modifiable flexibly for example by changing the depth of the description of databases in quarter one or in quarter two, by changing the number and size of groups for team works or by giving the team work part for students as homework.

CONCLUSION

The present paper introduces a lesson plan which is both useful and interesting for the students in the topic of poverty and income inequality. Majority of the students in class are members of the Generation Y, sharing common traits. This has an impact on the applied teaching methods as well. Members of Generation Y are technology oriented, like belonging to groups, need immediate feedbacks, like being entertained and prefer to get information visually. Consequently, during the lesson the knowledge transfer should be realized in an entertaining, spectacular and technology oriented way.

The paper evaluated the experiences of a seminar held in the topic of poverty and income inequality in spring 2015. Several positive elements were found; however, the lack of computers, lack of teamwork and lack of enjoyable tasks were detected as problems. The problems can be solved by using computer equipped classrooms or the IT devices of the students, by putting more focus on the usage of databases and by involving independent teamwork and student presentation in class.

In the case of databases, the paper suggests introducing several different databases (Eurostat and OECD Stat) to get a broader view about the applicable indicators in describing poverty and income inequality. Nonetheless, Gapminder seems to be a proper tool to satisfy both the teaching purposes and the needs of Generation Y; as a result, its usage is more highlighted in the lesson plan developed in this paper.

The proposed lesson plan is significant from the point of view of my future teaching activities. Yet, the reflections about my previous seminar and the evaluation of databases can be of use for other educators of the Generation Y as well. The evaluation and the lesson plan collect essential impressions and thoughts concerning the issue addressed, at the same time enhancing the development of more detailed lesson plans.

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