Using Social Media to Enhance Learning Outcomes in Engineering Courses

A/Prof Hussein Dia
Dr Rayya Hassan
Ms Elizabeth Chong (Sarawak)

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Outline

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- Context and rationale
- Aims and objectives
- Methodology
- Data collection
- Preliminary results
- Next steps

Context and Rationale

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Potential for Social Media (SM) as a facilitating tool in achieving higher level learning is supported by the literature

Valuable for transfer of knowledge and support tool for development of higher-level cognitive skills (reflection, metacognition)

Some studies suggest that introvert students and students from conservative cultural backgrounds expect to benefit more from the use of SM

Context and Rationale

While SM have become essential parts of university students' daily lives, students still did not perceive a connection between their online activities and institutional learning

Image: © Dollar Photo Club

Context and Rationale

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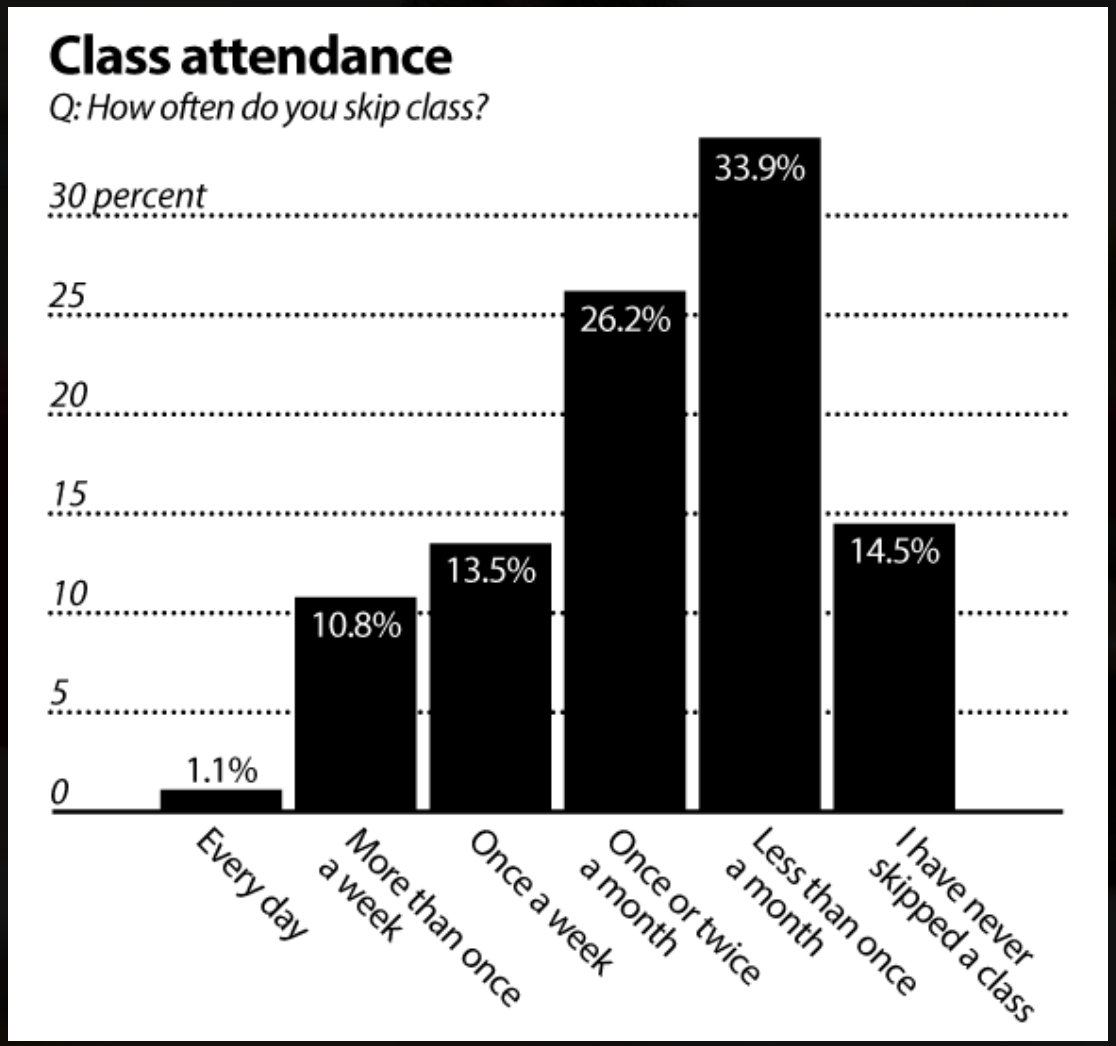
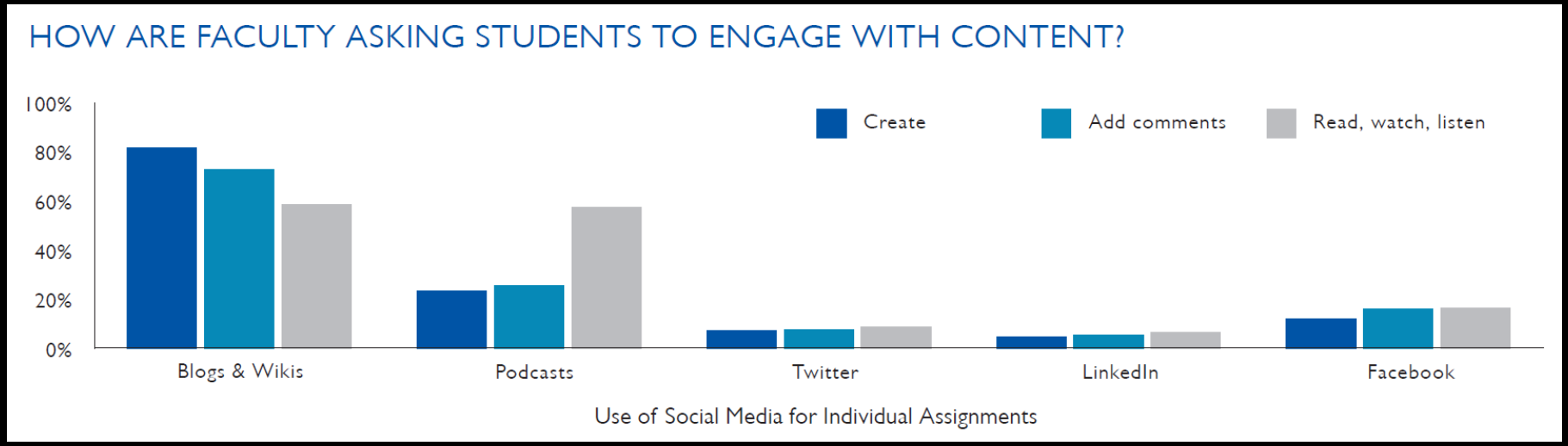
Lecture attendance and engagement

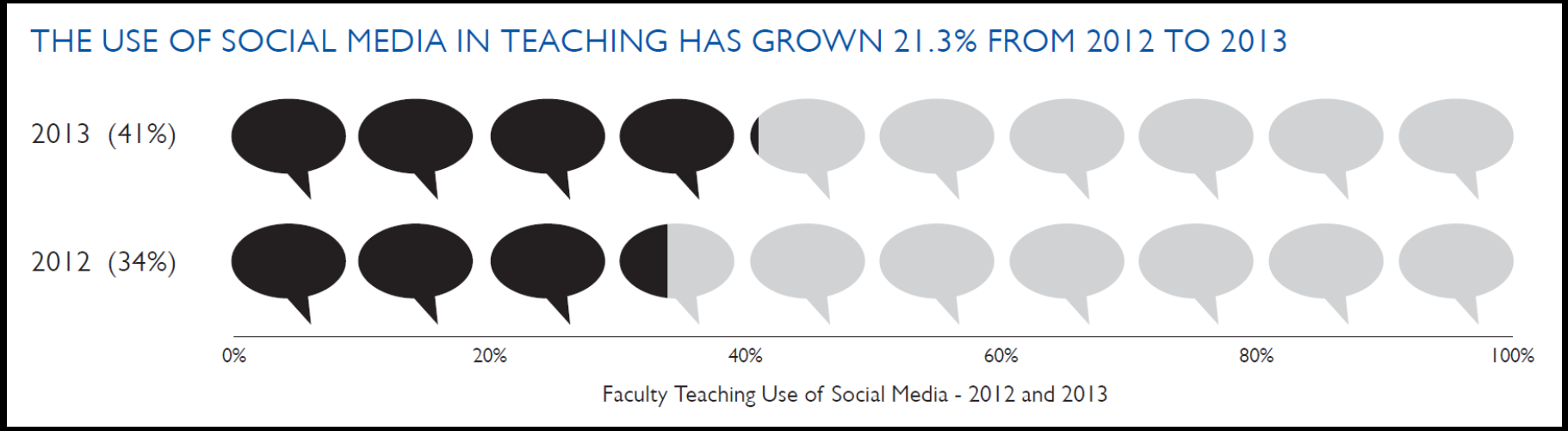


The Brown Daily Herald, 2014

Pearson Learning: SM Survey 2013

U.S. Survey – respondents 7,969 academic staff

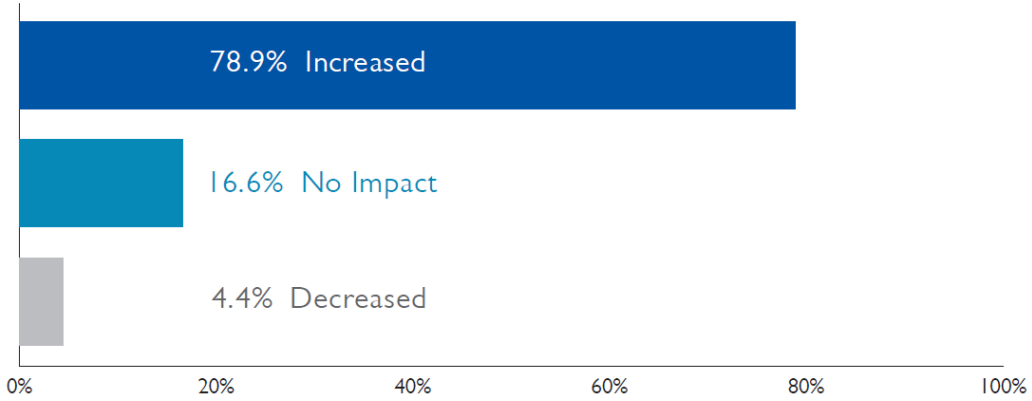




Seaman, J. and Tinti-kane, H (2013). Social Media for Teaching and Learning, Pearson. Available at www.pearsonlearningsolutions.com

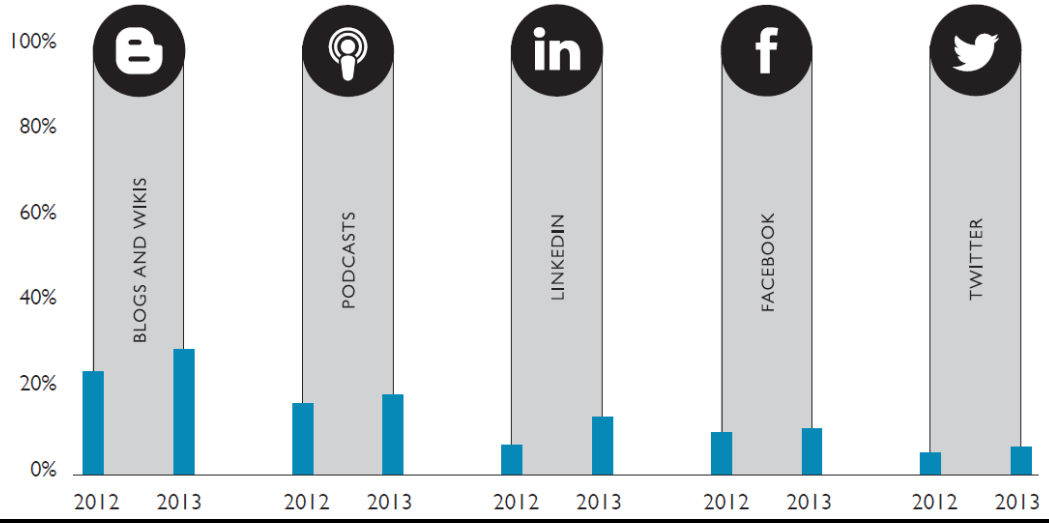
Pearson Learning: SM Survey 2013

WHAT IMPACT HAS TODAY'S TECHNOLOGY HAD ON FACULTY-STUDENT COMMUNICATION?



The Impact That Digital Communication Has Had on Your Communication with Students

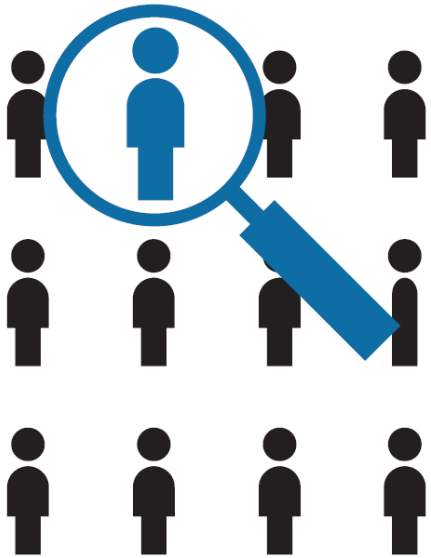
HOW FREQUENTLY ARE BLOGS AND WIKIS USED IN TEACHING?

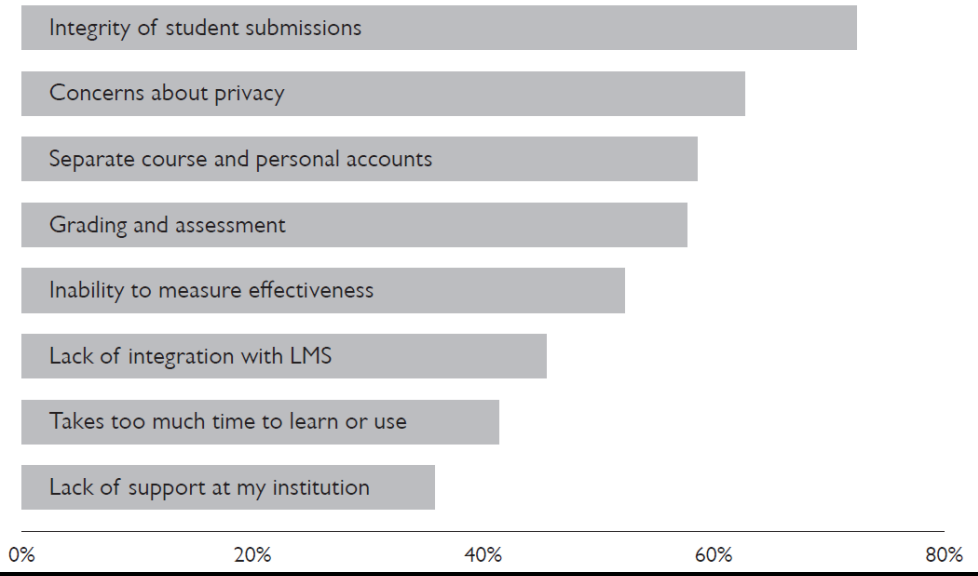


Seaman, J. and Tinti-kane, H (2013). Social Media for Teaching and Learning, Pearson. Available at www.pearsonlearningsolutions.com

Pearson Learning: SM Survey 2013

THE NUMBER ONE CONCERN OF SOCIAL USE IS THE INTEGRITY OF STUDENT SUBMISSIONS (72%)



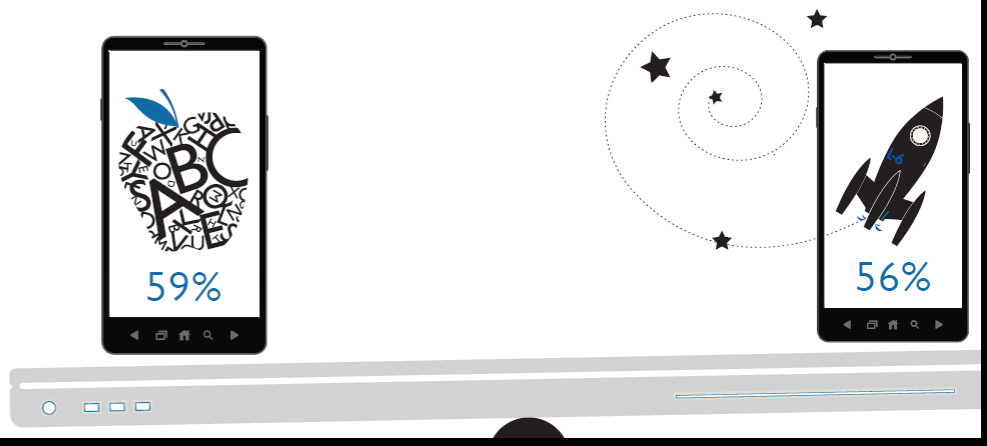


DO ONLINE AND MOBILE CREATE BETTER LEARNING ENVIRONMENTS?

59% of faculty agree that the interactive nature of online and mobile technologies create better learning environments.

HOWEVER

56% of faculty also agree that online and mobile technologies are more distracting than helpful to students for academic work.



Seaman, J. and Tinti-kane, H (2013). Social Media for Teaching and Learning, Pearson. Available at www.pearsonlearningsolutions.com

Pearson Learning: SM Survey 2013

We need to utilize the technological tools before we are considered useless and being unable to connect with the students of 21st century.
(Part-time Engineering Faculty)

We must prepare our students to be the best citizens possible as they enter the workforce and the world.
(Full-time Humanities Faculty)

Faculty Voices

Social media will become an aspect of higher education, even if nobody knows exactly how yet.
(Full-time Natural Sciences Faculty)

Seaman, J. and Tinti-kane, H (2013). Social Media for Teaching and Learning, Pearson. Available at www.pearsonlearningsolutions.com

Pearson Learning: SM Survey 2013

I strongly disagree with any policy that would require (or even encourage) students to use it. As educators, it should not be our role to push students to use social media.
(Full-time Natural Sciences Faculty)

As the business community is finding out, the use of social media could be highly over rated in the educational setting.
(Full-time Computer and Information Science Faculty)

Faculty Voices

I need time and support to get up to speed on technology and my department does not provide any incentive to use it.
(Full-time Education Faculty)

Seaman, J. and Tinti-kane, H (2013). Social Media for Teaching and Learning, Pearson. Available at www.pearsonlearningsolutions.com

Pearson Learning: SM Survey 2013

Major Findings

Main benefit of using SM is the potential to transform from pushing content outward to a way of inviting conversation and exchanging information

SM offers tools for student-centred and social constructivist pedagogies designed in online environments

SM enables students to collaborate in a number of ways - a marked difference from first generation e-learning tools in which social learning was less possible

Seaman, J. and Tinti-kane, H (2013). Social Media for Teaching and Learning, Pearson. Available at www.pearsonlearningsolutions.com

Project Aims

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Enhance our understanding of the potential of ***LinkedIn***, as a flexible and mobile social media platform, in contributing to high quality and engaged collaborative learning in higher education

Essentially a SM attitudes and usage study to examine how ***LinkedIn*** can enhance engagement with students through delivery of professional content

Objectives

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Investigate how ***LinkedIn*** can be used in transport engineering courses to enhance learning outcomes in sustainable transport practices

Explore the perceived benefits, from a student perspective, of its potential to support face-to-face learning

Complement existing body of literature with insights on its potential in enhancing learning in higher education and particularly in engineering courses

Make recommendations towards its promotion as a tool in engineering education for achieving higher level learning

Research Questions

How ***LinkedIn*** helps enhance students' learning?

- Broader technical knowledge
- Better understanding of global sustainable practices
- Higher competency in problem solving
- Improved skills for multi-disciplinary collaboration through participation in discussions with experts and other students

Are the learning benefits different for undergraduate and postgraduate students? Sarawak and Hawthorn students?

SWINBURNE UNIVERSITY OF TECHNOLOGY

SWINBURNE UNIVERSITY OF TECHNOLOGY SARAWAK CAMPUS

Why *LinkedIn*?

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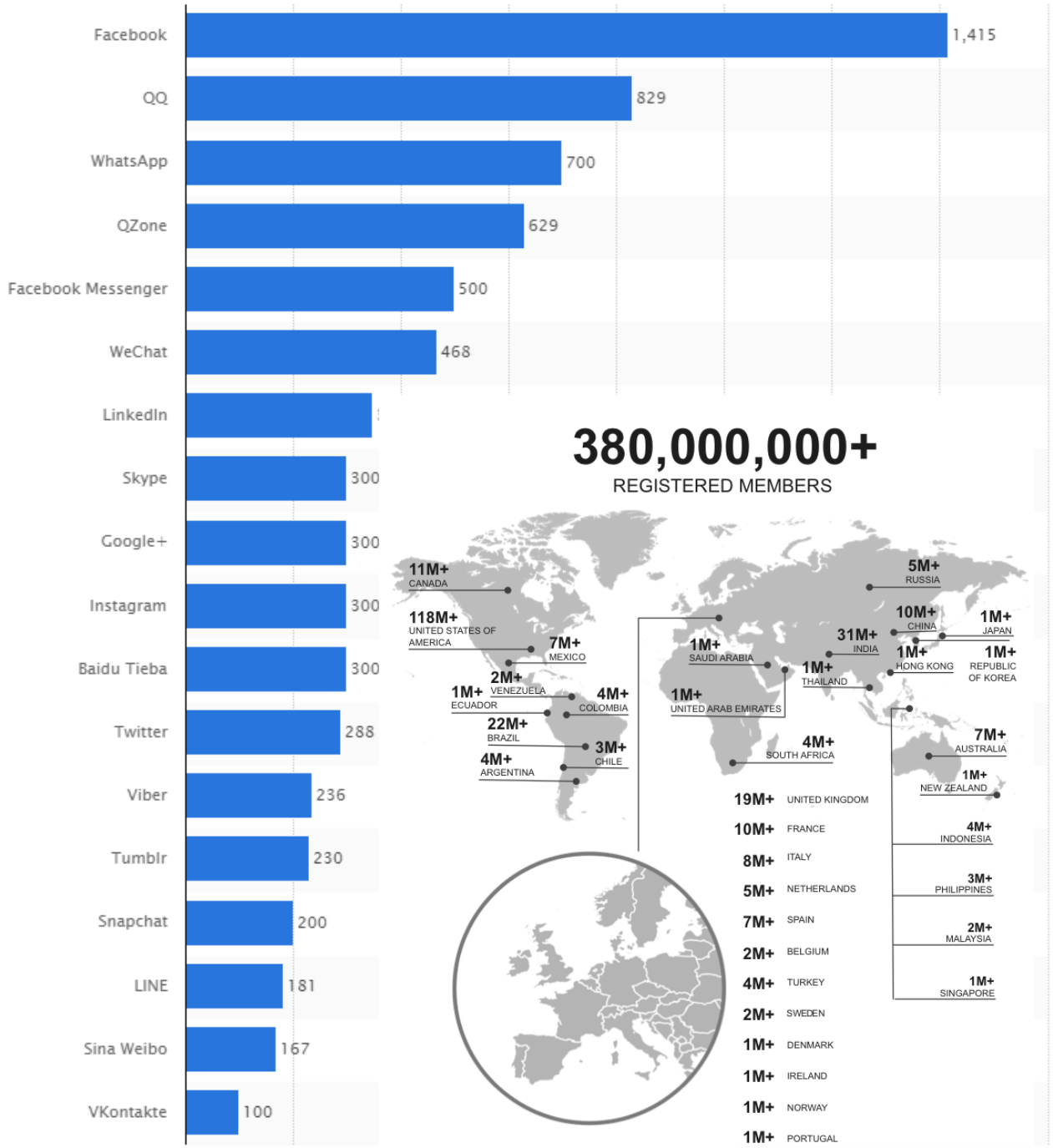
Mainly used for professional and business-oriented social networking

Allows users to develop long-form posts, share insights and participate in global networks and collaboration anywhere, anytime and using any device

Freely available with no on-going license or maintenance fees, which makes it easily scalable to other units of study



Source: press.linkedin.com

Methodology

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Stage 1 - Completed

Student Participation and Engagement on the LinkedIn Group During Semester 1, 2015

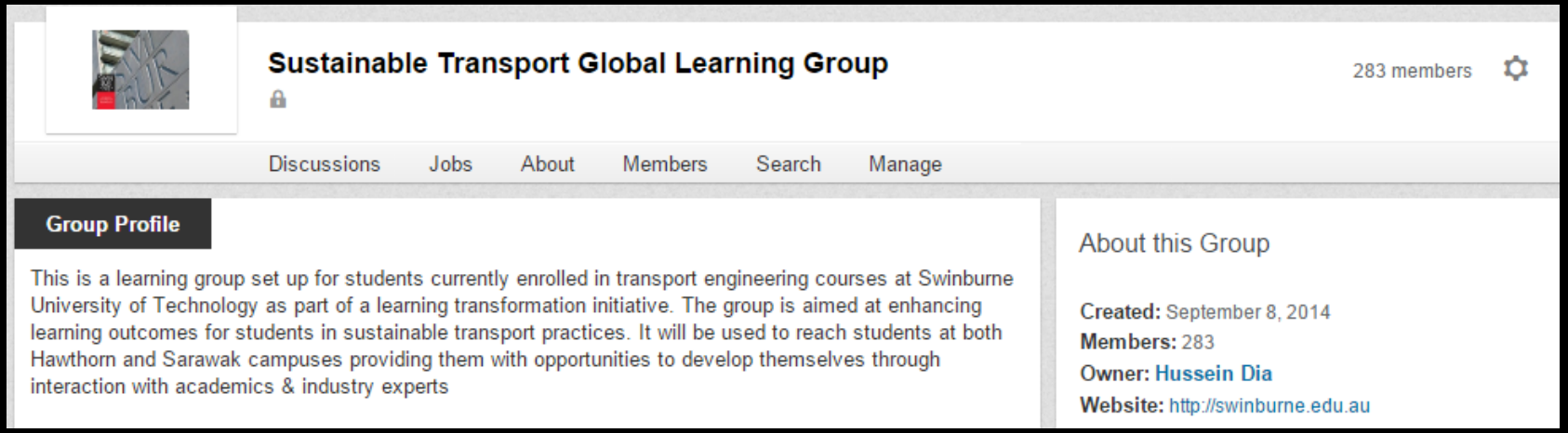
- Postgraduate/Undergraduate Elective Unit – Hawthorn (50/53 students)
- Undergraduate Unit (Year 3) – Hawthorn (112/138 students)
- Undergraduate Unit (Year 2) – Sarawak (75/96 students)
- Few Final Year Research Project, Masters and PhD (5 students)

Stage 2 – About to be completed

Research Survey and Evaluation – Post Release of Marks and Grades

Methodology – Stage 1

- Set up LinkedIn Group
- Invite national and international domain experts to write posts on sustainable transport
- Students set up LinkedIn account/profile



Student Participation

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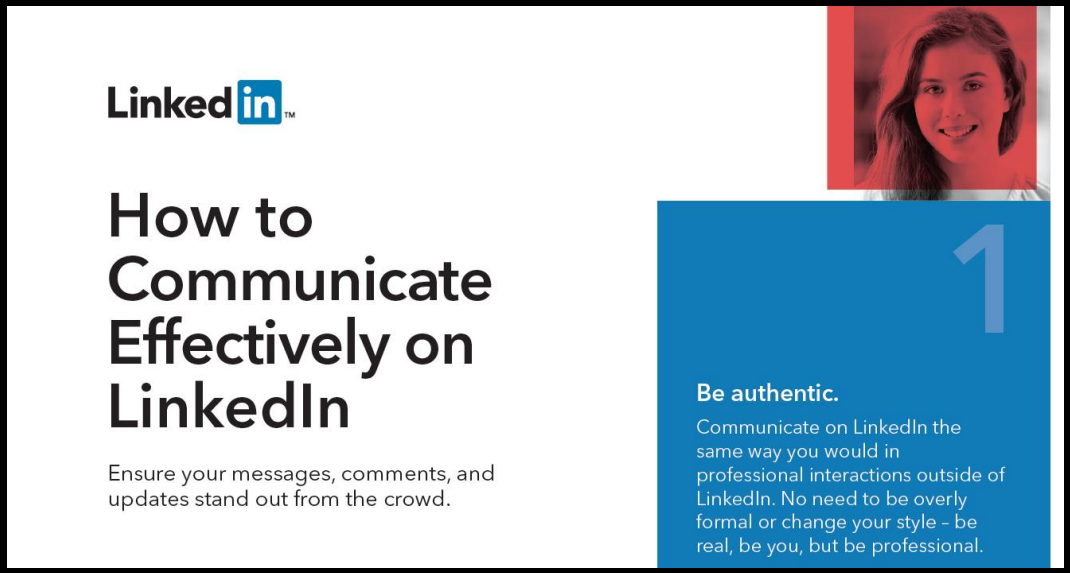
Students were asked to

- Send a request to join the LinkedIn group
- Comply with the online etiquette and code of conduct



- Complete 2 on-line tests (5% of total mark) covering the material posted on the group

Student Engagement

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Total of 242 (out of 292 students) joined the Group

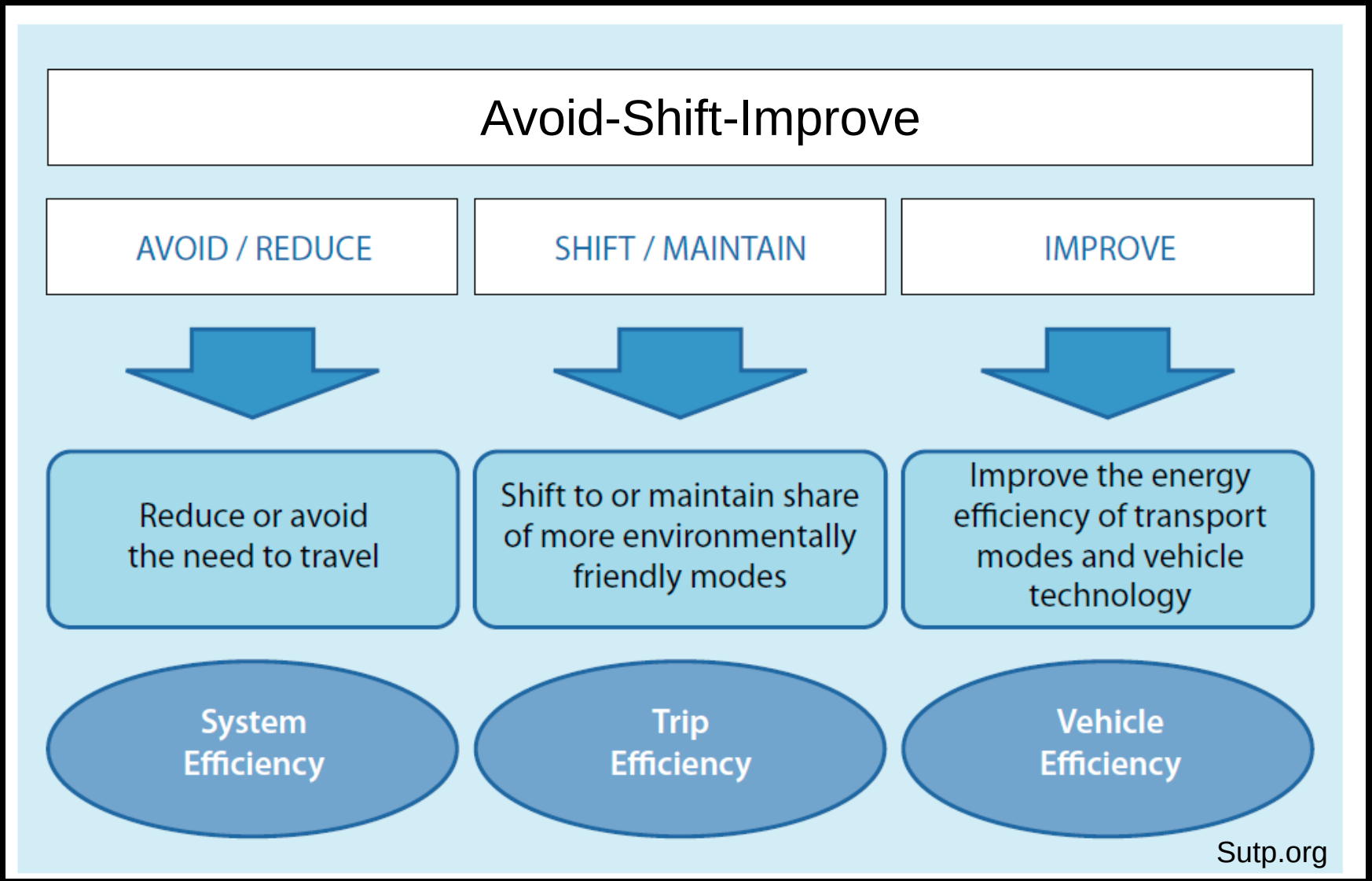
Students engaged with the specialists and others on the group – *e.g. wrote comments, asked questions, and shared ideas, articles or news related to the topic under discussion*

5 online motivational badges awarded every week

DOMAIN KNOWLEDGE AREA

Sustainable Transport

Sustainable Transport Framework



Invited Topics and Domain Experts

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National and International Experts

Total 9 invited articles

- Four national
  - 3 academia
  - 1 industry
- Five international
  - 3 academia
  - 2 industry

Week 2

Integrated land use and transport planning: Is this the key to urban sustainability?

Professor Michael Anthony Peter Taylor
School of Natural and Built Environments
University of South Australia
Adelaide, Australia

Week 3

Transport systems and public health: Is repeated and prolonged driving in congested conditions a form of chronic stress and a serious health risk in the long run?

A/Professor Ghassan Abu-Lebdeh
Department of Civil Engineering
American University of Sharjah
United Arab Emirates

Week 4

How do we move towards smart and sustainable urban mobility?

Professor Lee Der-Horng
Department of Civil & Environmental Engineering
National University of Singapore
Singapore

Week 5

Turning idleness into action: 7 steps to help create healthy and active communities

Ms Rachel Smith
Principal Transport Planner
AECOM
Brisbane, Australia

Week 6

Should public transport tickets be free?

Professor Graham Currie
Professor of Public Transport
Institute of Transport Studies
Department of Civil Engineering
Monash University, Melbourne, Australia

Week 7

Educating across the convergence: How do we prepare the next generation of transportation professionals to lead the sustainability agenda?

Mr David E. Pickeral, JD
Transportation Sector Lead
IBM Industry Smarter Solutions Team
Virginia, USA

Week 8

What does successful transport integration really mean?

Professor Phil Charles
Transport Group
School of Civil Engineering
University of Queensland
Brisbane, Australia

Week 9

Gamification and sustainable mobility: What have we learnt and how do we move forward?

Dr Eleni Vlahogianni
Assistant Professor
School of Civil Engineering
National Technical University of Athens
Greece

Week 10

Transport in the Metropolis: How do we plan and manage transport in a rapidly urbanising world?

Mr Pedro Ortiz
Visiting Professor – Milano Politecnico
Senior Urban Planner – The World Bank
Washington D.C.

*Data Collection - **LinkedIn** Interactions*

	No. views	LinkedIn Group Interactions		Blog Post Interactions on Expert Profile	
Article		No. Likes	No. Comments	No. Likes	No. Comments
Integrated land use and transport planning: is this the key to urban sustainability?	735	13	8	19	4
Transport systems and public health: Is repeated and prolonged driving in congested conditions a form of chronic stress and a serious health risk in the long run?	539	13	23	33	10
How do we move towards smart and sustainable cities?	655	26	20	30	12
Turning idleness into action: 7 steps to help create healthy and active communities.	498	5	10	29	4
Should Public Transport Tickets be Free?	968	6	12	41	18
Educating the next generation of sustainable transport professionals.	496	1	2	16	6
What does successful transport integration really mean?	491	8	9	16	5
Gamification and sustainable mobility: What have we learnt and how do we move forward?	435	10	4	25	0
Transport, the backbone of Metropolitan growth.	426	3	2	31	8
Total	**5,243**	**85**	**90**	**240**	**67**

Qualitative Assessment - Ongoing

Quality of interactions

Do students follow up with relevant comments and questions?

Do students relate the topic to local issues here in Melbourne or Sarawak?

Do students provide examples of good practices that they have seen? or

Do students simply press the ‘Like’ button?

Observations

Students are most engaged with the articles that contain interesting and exciting content

Same group of students were always most active, commenting and engaging on a regular basis

Students from the Sarawak Campus (1st and 2nd year Civil Engineering students) were the least engaged although they participated by “liking” the articles

Observations

Different unit outlines in the three subjects - some students felt the post content was not directly related to the topics they covered in class

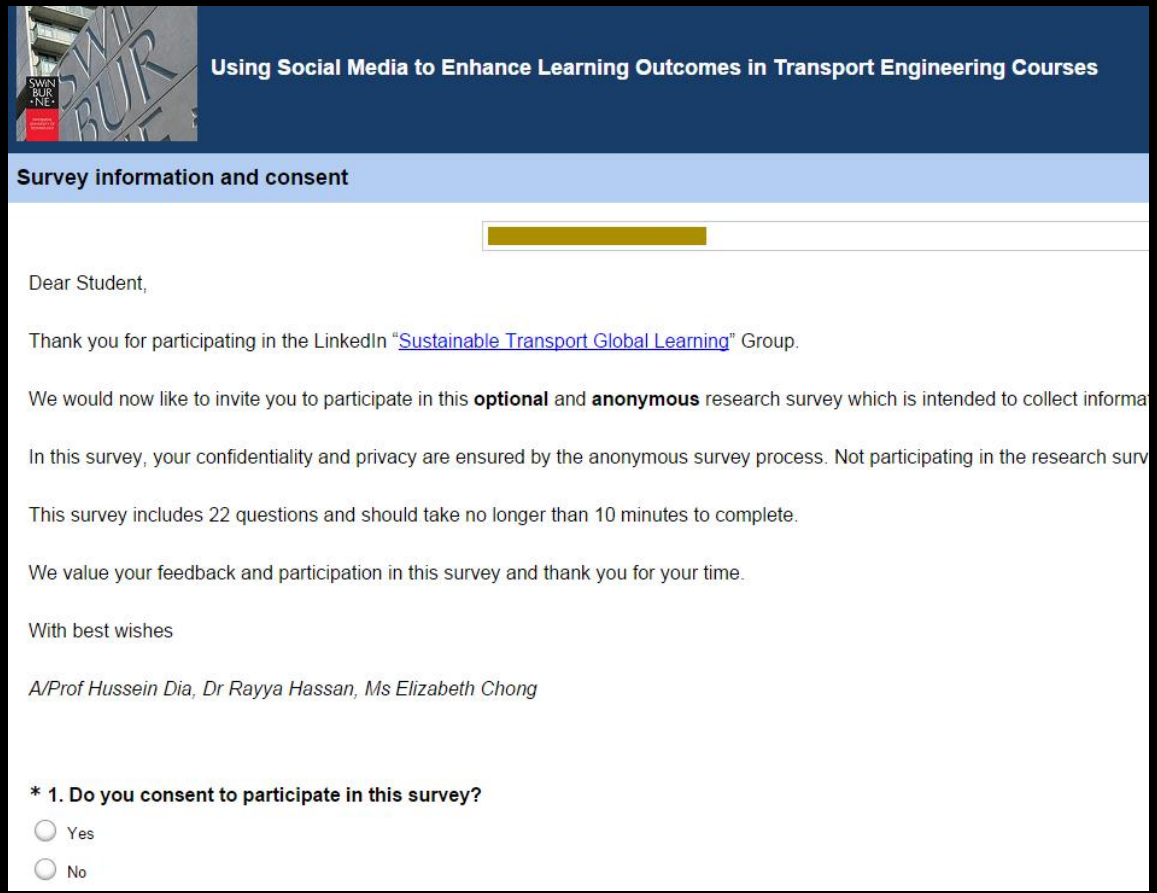
Students' engagement slowed during the last 4 weeks of the semester – possibly due to higher work load or 'saturation'?

Comments from people outside the Group provided students with different insights from other professionals

Stage 2: Research Survey and Evaluation

Student participation in the research part of this initiative:

- Optional and anonymous
- Confidentiality and privacy are protected



Using Social Media to Enhance Learning Outcomes in Transport Engineering Courses

Survey information and consent

Dear Student,

Thank you for participating in the LinkedIn "Sustainable Transport Global Learning" Group.

We would now like to invite you to participate in this **optional** and **anonymous** research survey which is intended to collect informa

In this survey, your confidentiality and privacy are ensured by the anonymous survey process. Not participating in the research surv

This survey includes 22 questions and should take no longer than 10 minutes to complete.

We value your feedback and participation in this survey and thank you for your time.

With best wishes

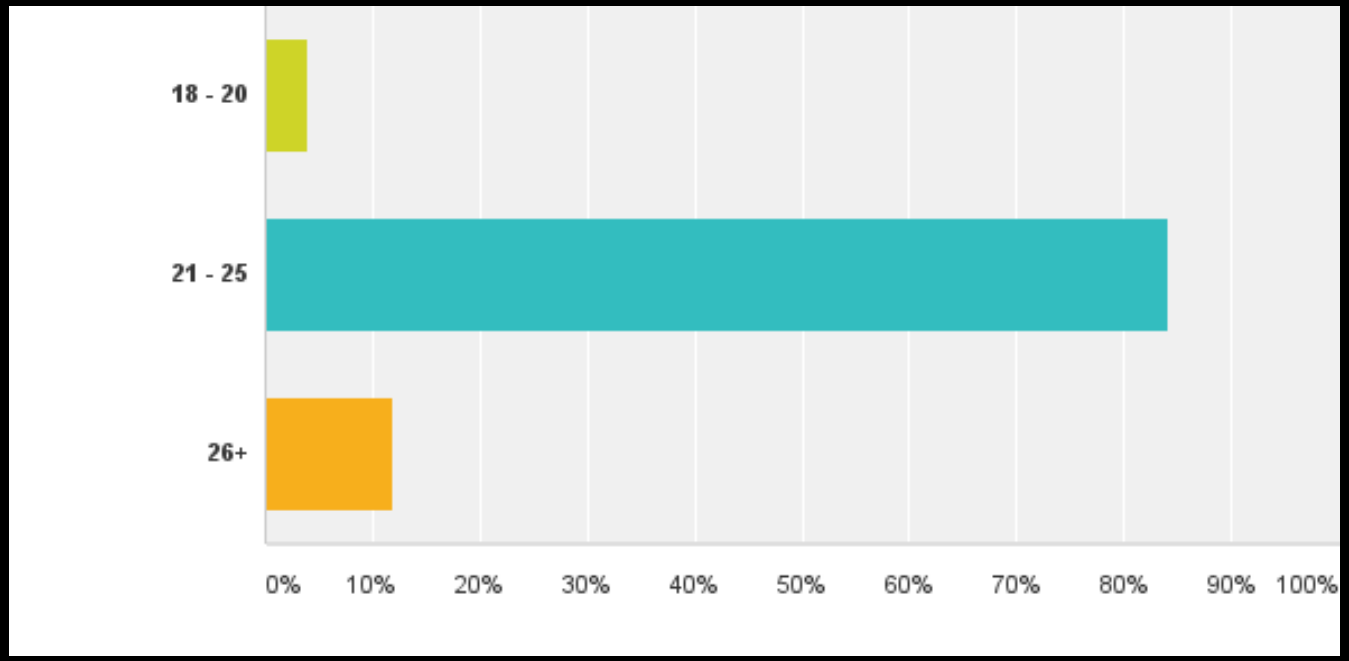
A/Prof Hussein Dia, Dr Rayya Hassan, Ms Elizabeth Chong

*** 1. Do you consent to participate in this survey?**

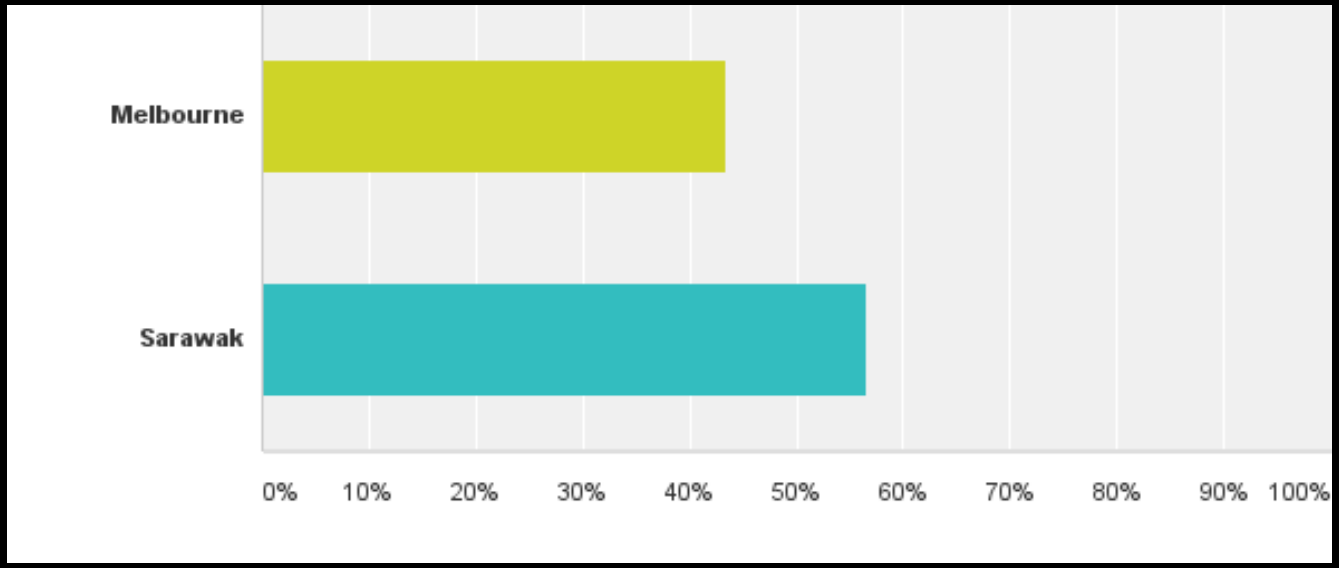
- Yes
- No

Q2: Age

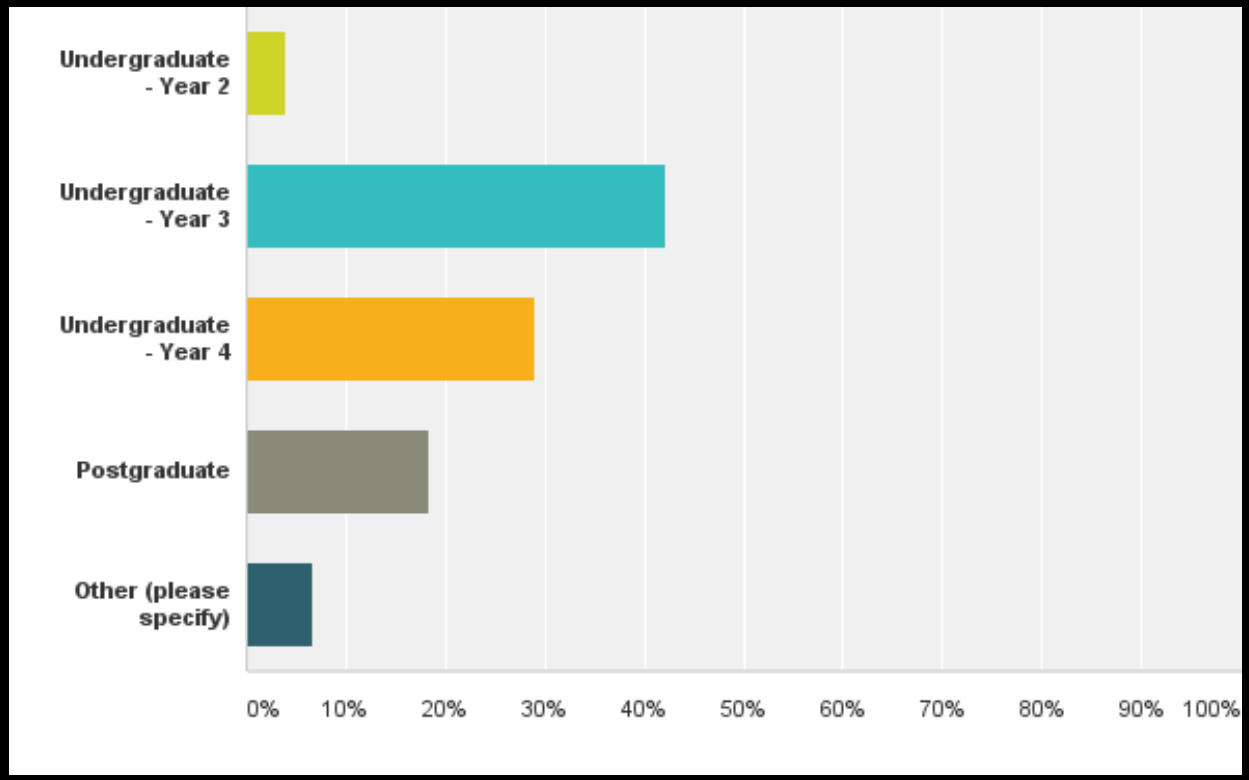
78 Responses



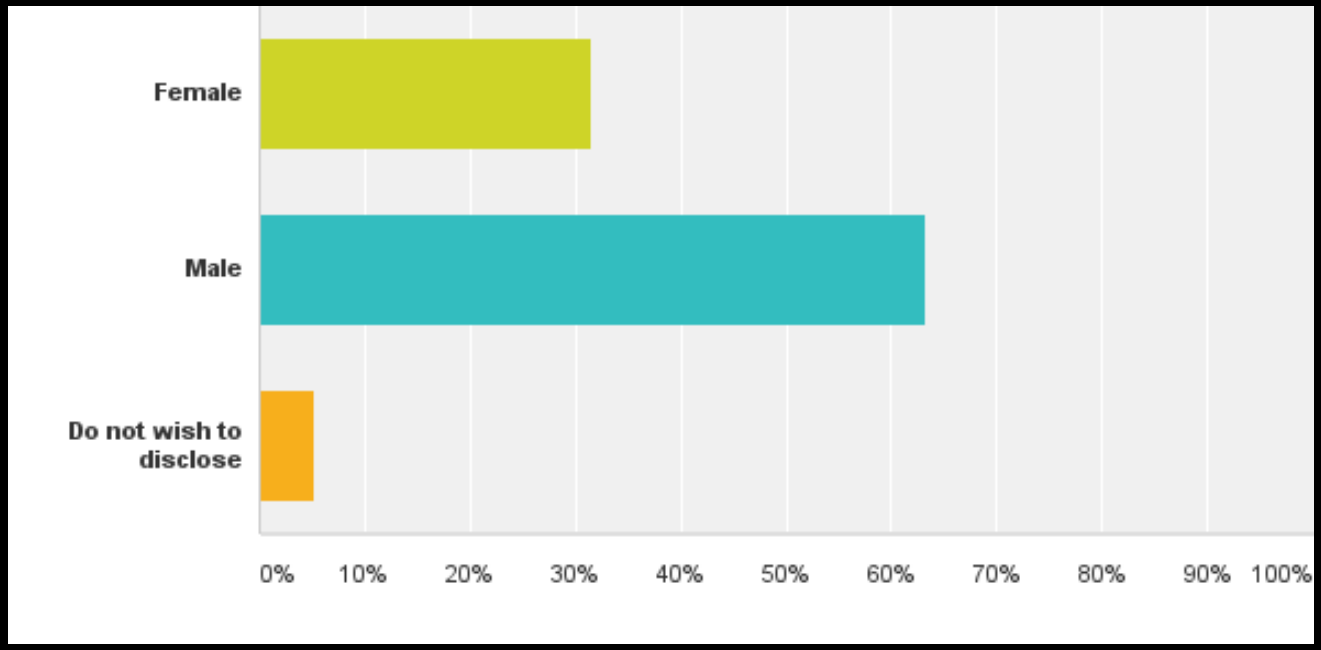
Q3: Your campus location



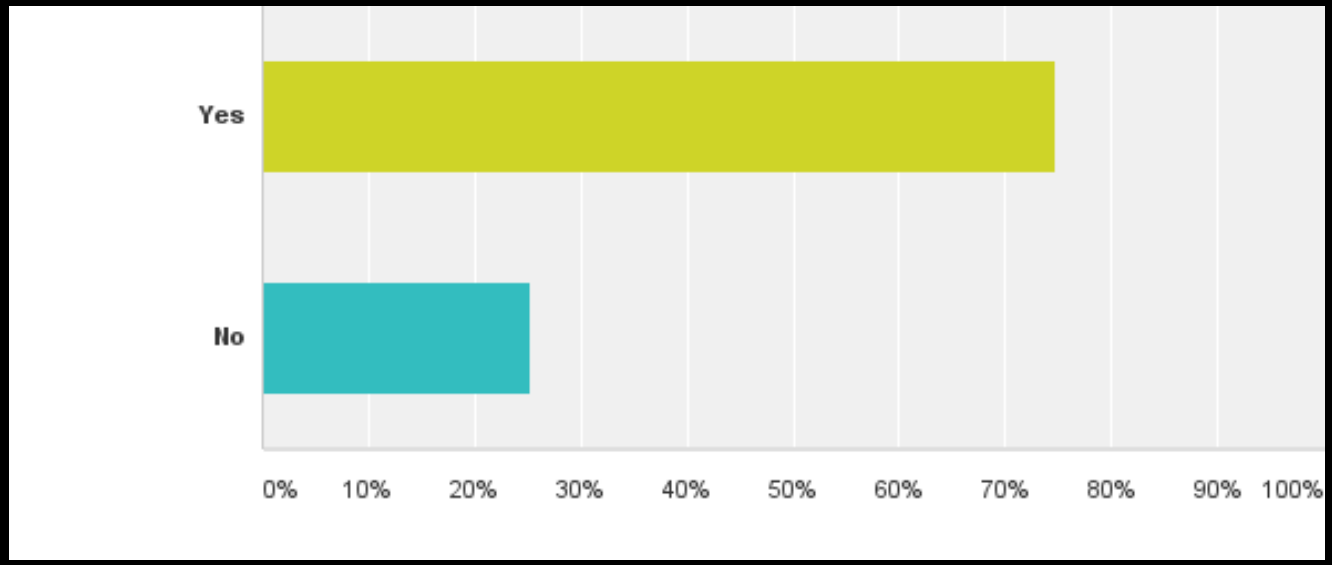
Q4: Your year level at Swinburne



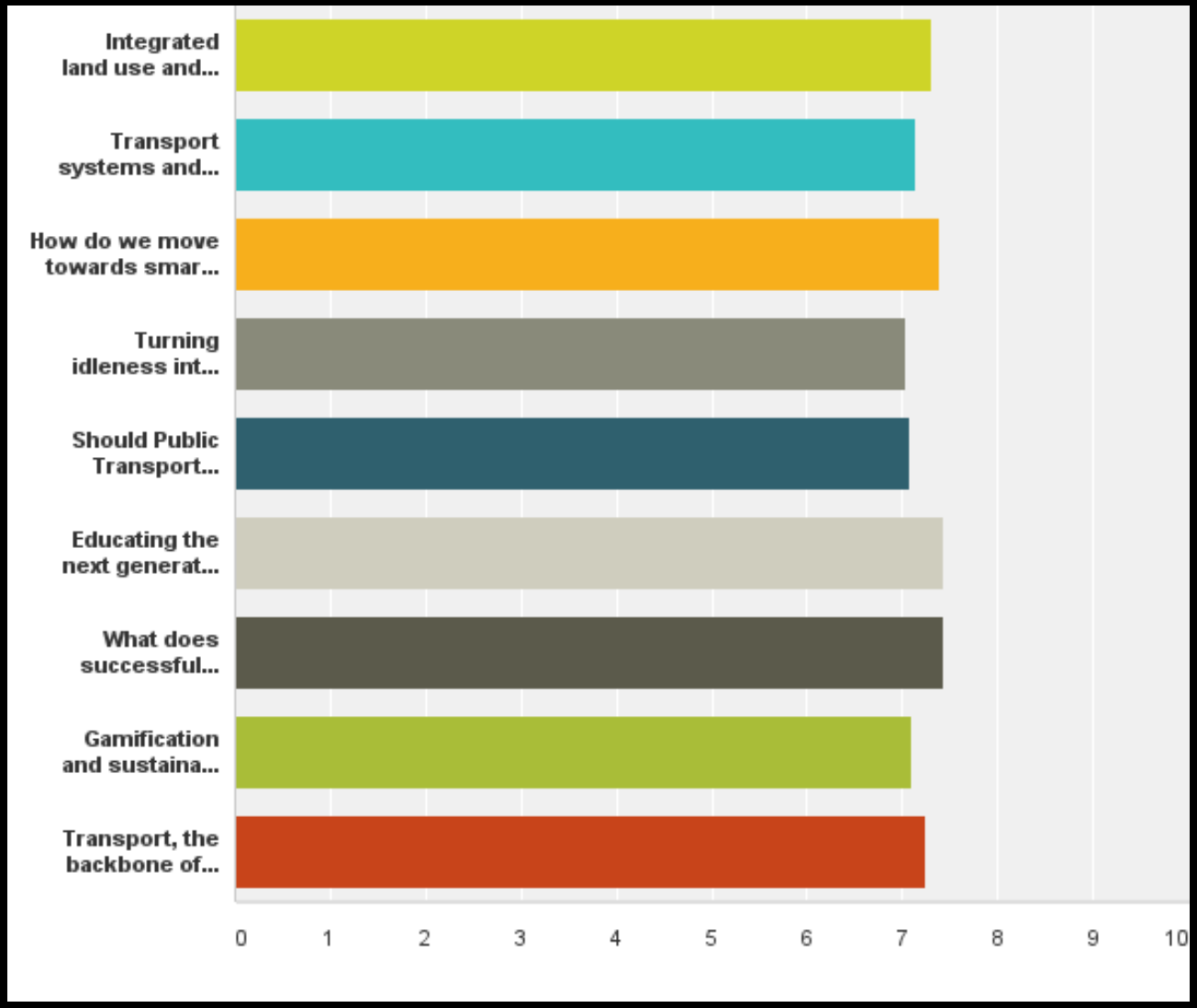
Q5: Your gender



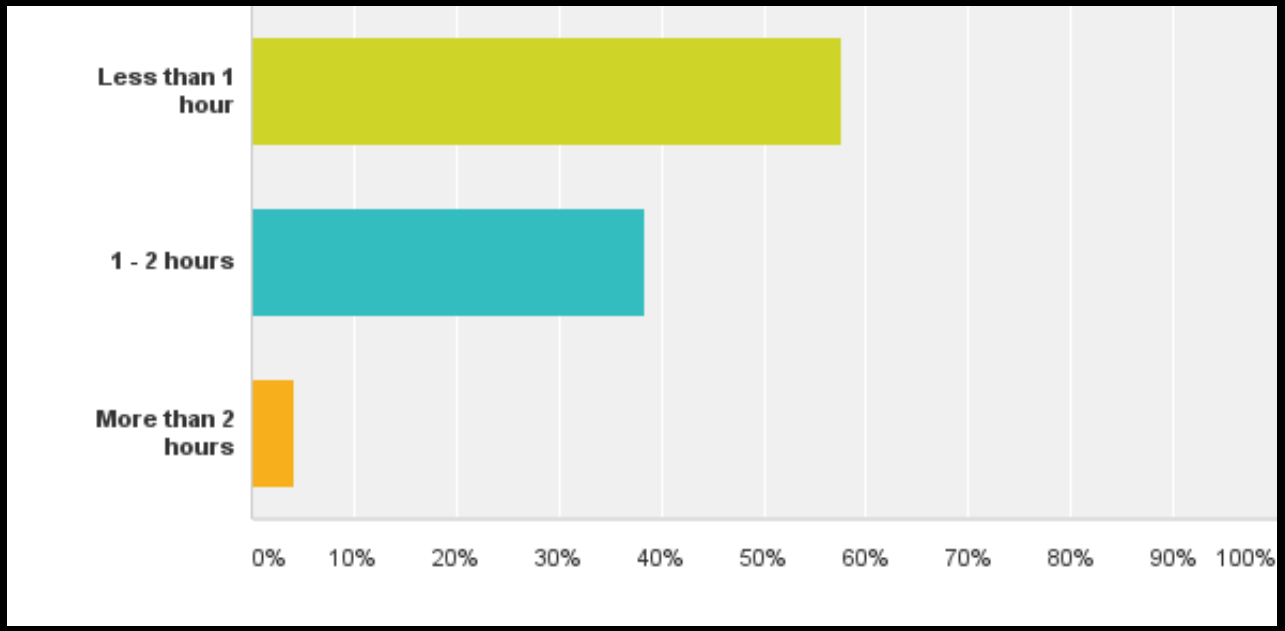
Q6: Have you heard of or used LinkedIn before taking part in this project?



Q9: How would you rate the topics in terms of their relevance to enhancing your learning and knowledge in sustainable transport?

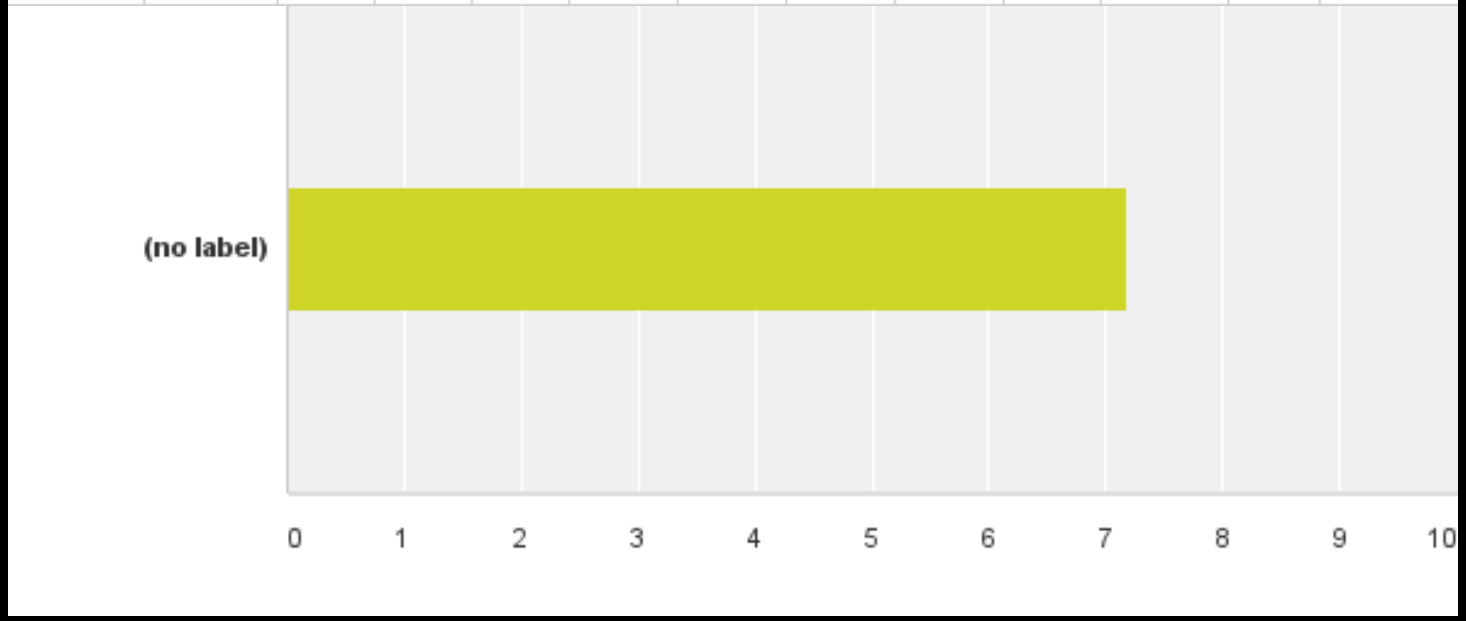


Q10: On average, how much time did you spend every week on the LinkedIn Group?



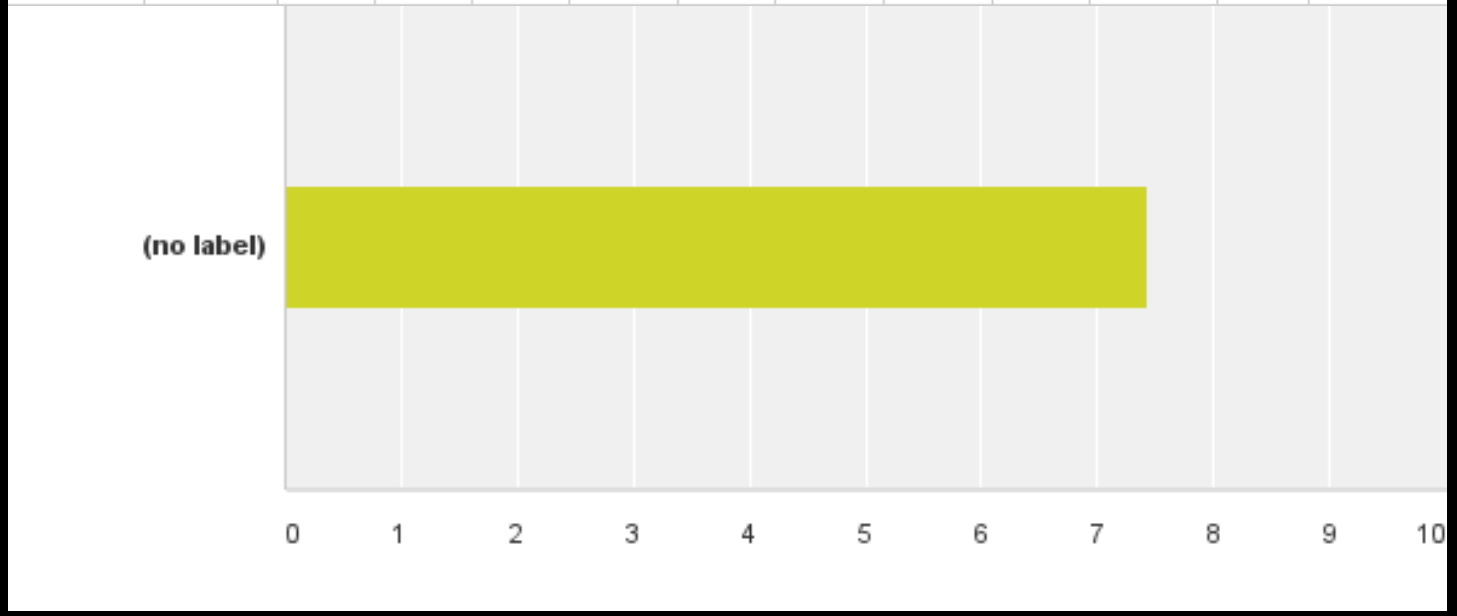
Q11: Do you now, compared to when you first joined the Group, have a better understanding of sustainable transport?

	1 - Strongly Disagree	2	3	4	5	6	7	8	9	10 - Strongly Agree	Total	Weighted Average
(no label)	0.00% 0	1.39% 1	2.78% 2	5.56% 4	11.11% 8	11.11% 8	25.00% 18	19.44% 14	4.17% 3	19.44% 14	72	7.18



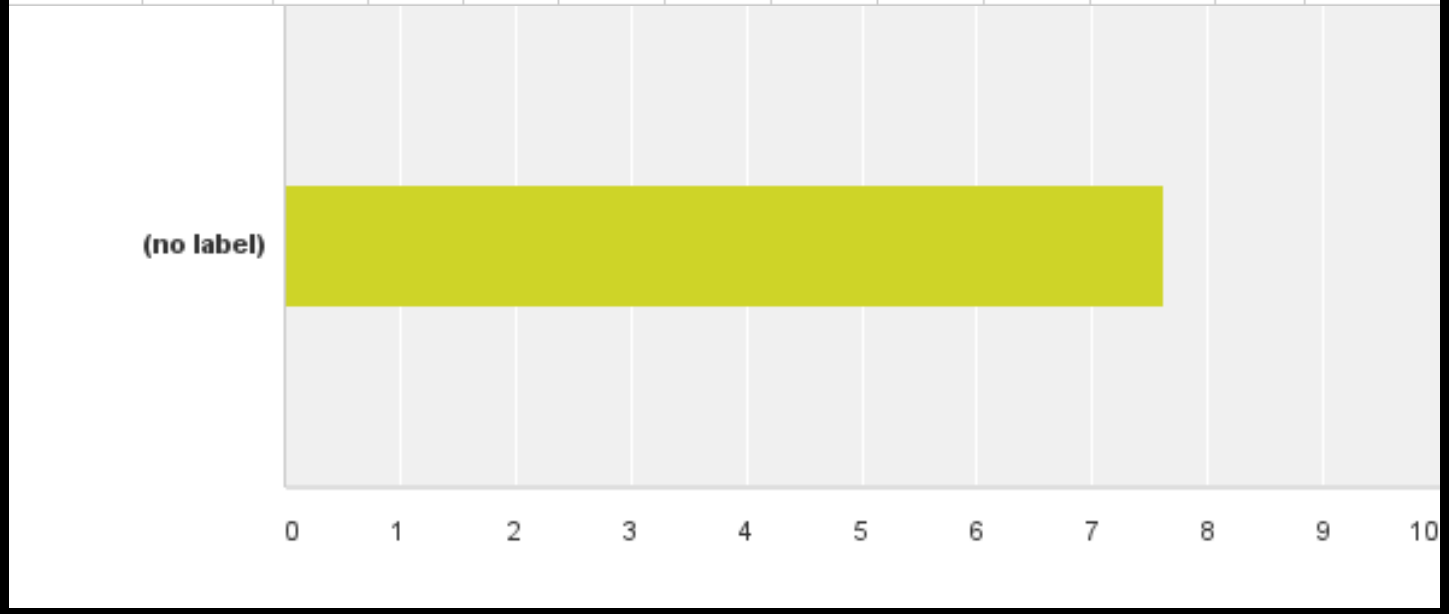
Q12: Do you now, compared to when you first joined the Group, have a better understanding of global issues and practices in sustainable transport?

	1 - Strongly Disagree	2	3	4	5	6	7	8	9	10 - Strongly Agree	Total	Weighted Average
(no label)	0.00% 0	1.39% 1	1.39% 1	2.78% 2	11.11% 8	9.72% 7	19.44% 14	30.56% 22	4.17% 3	19.44% 14	72	7.44



Q18: Has your participation in this project increased your interest in the field of sustainable transport?

	1 - Strongly Disagree	2	3	4	5	6	7	8	9	10 - Strongly Agree	Total	Weighted Average
(no label)	0.00% 0	0.00% 0	0.00% 0	4.76% 3	11.11% 7	15.87% 10	14.29% 9	17.46% 11	11.11% 7	25.40% 16	63	7.63



Next Steps

- Undertake detailed analysis of survey results
- Evaluation of initiative
- Final reporting
- Explore external funding opportunities